

Milwaukee ***Water Works***

Safe, Abundant Drinking Water.



2003 Annual Report

An Enterprise Fund of the City of Milwaukee



Milwaukee Water Works



Mayor
John O. Norquist



Mariano
Schifalacqua
Commissioner, DPW



Carrie Lewis
Superintendent,
MWW

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Milwaukee Administration

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John O. Norquist

City Attorney
Grant F. Langlely

City Comptroller
W. Martin Morics

City Treasurer
Wayne F. Whittow

Commissioner
of Public Works
Mariano Schifalacqua

Director of Operations,
DPW
James P. Purko

City Engineer
Jeffrey S. Polenske

Utilities and Licenses Committee

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Chairman

Alderman
Joe Davis, Sr.,
Vice Chairman

Members

Alderman
Joseph Dudzik

Alderman
Fredrick G. Gordon

Alderman
Terry L. Witkowski

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Joe Davis, Sr., District 2

Michael S. D'Amato, District 3

District 4, vacant

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Marlene Johnson-Odom, District 6

Fredrick G. Gordon, District 7

Robert G. Donovan, District 8

Donald F. Richards, District 9

Willie C. Wade, District 10

Joseph Dudzik, District 11

Angel Sanchez, District 12

Terry L. Witkowski, District 13

Suzanne M. Breier, District 14

Thomas G. Nardelli, District 15

Michael J. Murphy, District 16

Willie L. Hines, Jr., District 17

2003 Executive Welcome

The Milwaukee Water Works is a self-financing enterprise owned by the City of Milwaukee. We serve the residents and businesses of the City of Milwaukee and 14 suburban communities with a user population of approximately 831,000 people.

In 2003, the Water Works delivered over 46 billion gallons of pure, clear Lake Michigan water.

We treat Lake Michigan water at two plants, passing the water through multiple barriers of the treatment process, including ozonation, which destroys illness-causing microorganisms, controls taste and odor, and reduces chlorinated disinfection byproducts. Following inactivation of microorganisms, the coagulation, settling and filtration processes remove additional particles.

Our 350 professional and dedicated employees in water treatment, distribution, engineering, customer service, and administration are committed to providing a reliable supply of superior quality water.

Highlights of 2003 include:

Unsurpassed Water Quality — The Environmental Protection Agency (EPA) requires water utilities to test for 90 regulated contaminants on a regular basis. The Milwaukee Water Works tests for over 425 known contaminants to assure that whether you are a residential customer or an industrial user of our water, you are receiving the highest quality water possible. Most of the contaminants are not detected.

High Quality, High Value — Milwaukee's water is an excellent value. The cost of 100 cubic feet of water, or 752 gallons, is \$1.18. The average person uses about 152 gallons per day. A recent study ranked Milwaukee #1 for lowest cost water and sewer service charges for typical process wastewater industrial customers among 16 "comparable U.S. metro" areas.

Ensuring a Safe and Sufficient Supply of Water — To ensure continuous water service, considerable ongoing efforts are undertaken to improve the physical and procedural security of MWW water plants and other facilities and infrastructure. Periodic emergency response exercises ensure the integrity of the utility's disaster response plan. Special emphasis was made on improving and maintaining both physical and cyber security at all facilities. Every project is examined from a security viewpoint prior to implementation. Access to facilities and critical information is restricted, and information is disseminated after careful review.

A Credit to the Community — MWW employees earned national honors for their efforts in the past five years to meet our customers' requirements for safe water and low-cost service. The Association of Metropolitan Water Agencies, representing the 125 largest water utilities in the U.S., presented the 2003 Gold Award for Competitiveness Achievement to MWW.

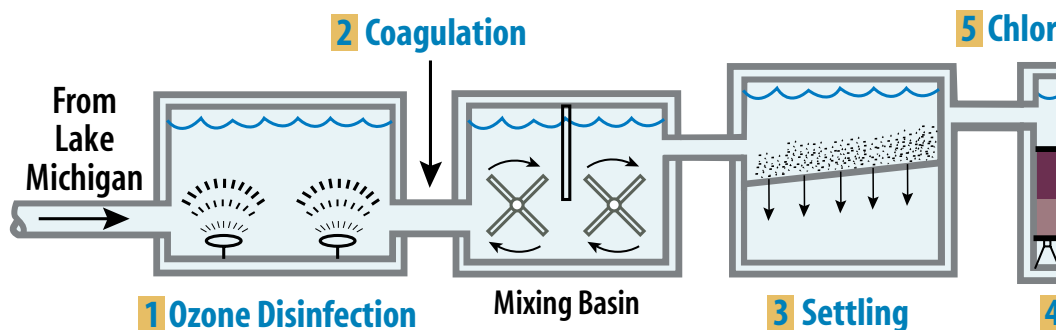


Carrie M. Lewis
Superintendent

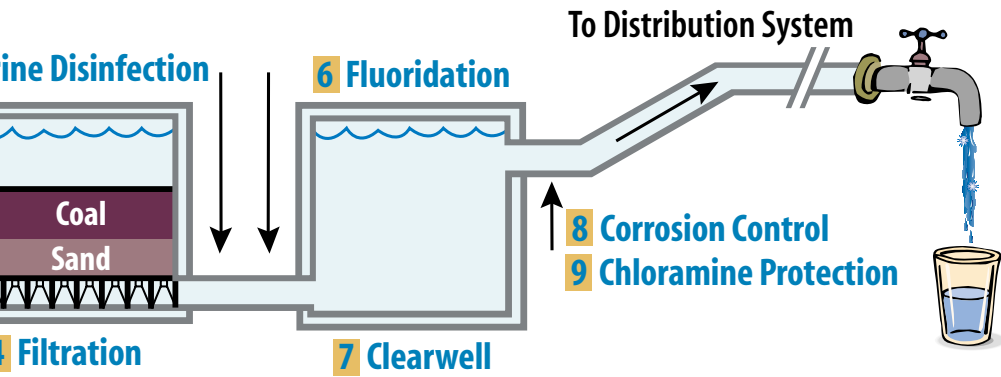


Dale E. Mejaki
Administration and Projects Manager

Milwaukee Water Works Drinking Water Treatment Process



- 1. Ozone Disinfection** — Ozone gas is bubbled through the incoming lake water. Ozone destroys disease-causing microorganisms including *Giardia* and *Cryptosporidium*, controls taste and odor, and reduces chlorinated disinfection byproducts.
- 2. Coagulation** — Very fine particles in the water adhere together to form larger particles as the coagulant alum is mixed into the water. Large particles are more effectively removed during the settling and filtering processes.
- 3. Settling** — Settling is the process in which solid particles settle out and are removed from the water.
- 4. Filtration** — The water is slowly filtered through 24" of anthracite coal and 12" of crushed sand to remove very small particles.
- 5. Chlorine Disinfection** — After filters, chlorine is added as a secondary disinfectant. This provides extra protection from potentially harmful microorganisms.



- 6. Fluoridation** — Fluoride, when administered at low levels, is proven to help prevent tooth decay.
- 7. Clearwell** — Treated water is stored in deep underground tanks and pumped as needed through the distribution system.
- 8. Corrosion Control** — A phosphorous compound is added to help control corrosion of pipes. This helps prevent lead and copper from leaching from plumbing into the water.
- 9. Chloramine Protection** — Ammonia changes the chlorine to chloramine, a disinfectant that maintains bacteriological protection in the distribution system.

Milwaukee Water Works

Safe, Abundant Drinking Water.



(Left to right) Common Council President Marvin Pratt, New Berlin Mayor Ted Wysocki, Mayor Norquist, Milwaukee Water Works Superintendent Carrie Lewis, DPW Commissioner Mariano Schifalacqua, and 5th District Alderman Jim Bohl drink to the signing of the contract with a cup of refreshing Milwaukee water.

Milwaukee Water Works Adds New Berlin to its Customer List

Wednesday, June 25, 2003, was a red-letter day for the Milwaukee Water Works. Mayor John O. Norquist and New Berlin Mayor Ted Wysocki signed a 20-year contract making the city of New Berlin the 13th municipal customer of the MWW. The contract is set for automatic renewal for subsequent 10-year periods, unless one party requests termination. The contract was not reached without some debate from the Common Council, but after a 15-1 vote, the deal was sealed.

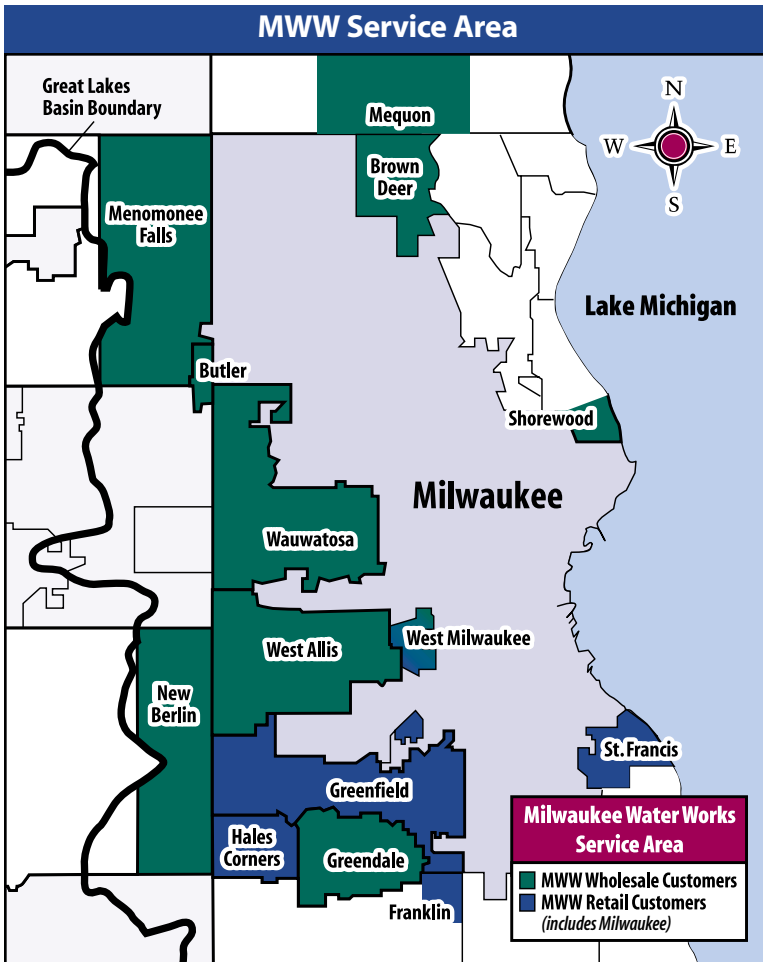
It will take a year before the infrastructure is in place for Lake Michigan water to serve the residents on New Berlin's east side. A subcontinental divide and international rules restricting the export of lake water beyond the divide cut off the western areas of the community from lake water. The contract has a clearly defined area for water service:

- 100% within Great Lakes watershed
- 100% within MMSD service area
- 95% developed and 5% parkland
- New Berlin has an existing distribution system

Milwaukee will receive \$68,000 a year, helping to hold down water rates for Milwaukee customers, while New Berlin will have access to the cleanest, most economical source of water available.



Mayor Norquist signs contract to sell City of Milwaukee water to New Berlin.



When you hear “Water Works,” think of a cool, refreshing glass of water. The MWW is the self-financing, ratepayer-funded drinking water utility owned by the City of Milwaukee.

We treat Lake Michigan water to provide high quality drinking water to 831,000 people in Milwaukee and 14 neighboring communities.

Our wholesale customer communities provide our drinking water through their own water utilities. They bill their customers and maintain the distribution systems in their communities. Our wholesale customers are Brown Deer, Butler, Greendale, Menomonee Falls, Milwaukee County Grounds, Shorewood, Wauwatosa, West Allis, and We Energies Water Services, which provides our water to some areas of Mequon. New Berlin has signed a contract as a wholesale customer and should be receiving Milwaukee water in 2004.

Our retail customer communities receive full service from MWW, including drinking water, customer billing and maintenance of their distribution systems. Our retail customers are Greenfield, Hales Corners, St. Francis, West Milwaukee and a part of Franklin.

In a unique arrangement, West Milwaukee receives billing services from MWW and maintains its own distribution system.

We appreciate the trust these communities have in the Milwaukee Water Works and our service, and we value our good working relationships with them as their water provider.

Milwaukee Water Works Wins National Recognition

Milwaukee Water Works employees have received national honors for their efforts in the past five years to reinvent and re-engineer our drinking water utility to make it more competitive. The “competitive stance” better meets expectations of consumers and municipal government leaders, and the economic forces that affect the business of providing high quality drinking water.

MWW Superintendent Carrie Lewis presented the Gold Award for Competitiveness Achievement to employees at worksite meetings during the last week in October. The Association of Metropolitan Water Agencies (AMWA) gave the honor to MWW and seven other public drinking water utilities. AMWA represents the 125 largest water utilities in the United States.

MWW provides purified drinking water from Lake Michigan to 831,000 people in Milwaukee and 14 surrounding communities. The Water Works employs approximately 350 professionals in water treatment, distribution, engineering, customer service, and administration.

At the meetings, Lewis shared a two-inch-thick file of suggestions for improvement that employees had made during an assessment of the utility in 1998. Many have been implemented through union management cooperative efforts, she said, such as cross-training and automating many areas.

“This award recognizes the contributions from employees throughout every part of the organization; it’s not about one or two managers,” Lewis said. “We made changes in how we do our business and increased the quality of our drinking water without decreasing our service level.”

The award recognized accomplishments such as consolidating work units and automating functions to streamline workflow without compromising effectiveness. Not only is the MWW workforce more cross-trained but employees have a broader base of skills to allow for more flexible scheduling and increased productivity.



Employees at the Linnwood treatment plant were recognized for their achievements since taking training and earning various certifications during the past five years.



Business Section employees Earl Smith, Bill Gehweiler, John Kako, Menbere Medhin, Pauline Scherbarth, and Tim Ignatowski oversee best practices for the utility's administration.



Distribution employees at the Lincoln Yard share the Gold Award with Superintendent Carrie Lewis before heading out into the field for their daily repair, maintenance, and water quality testing duties.

The changes have produced some impressive efficiencies. Here is a partial list:

- All 20,000 fire hydrants have been bar-coded, and field personnel carry laptop databases with information about the hydrant maintenance and water quality data. In the past, limited information about hydrants was kept manually.
- In the past, paper section maps required substantial labor to keep up-to-date and were kept in the office, not easily accessible to field personnel. Now, field investigators and supervisors can promptly determine locations of water mains and valves through GIS software on laptops in their vehicles.
- Preventive maintenance is conducted on distribution facilities such as laterals and valves in advance of street paving to greatly reduce water repairs conducted in newly paved streets.
- The Operator Consolidation Initiative, devised by a group of plant operators, union executives and MWW management, redefined duties of the operators as the treatment plants evolved from a manual, conventional treatment systems to an automated, ozone-disinfection/biological filtration treatment process.
- At the treatment plants, chemical doses for the purification process are automatically changed and flow-paced using continuous monitoring data, not manually set on the basis of individual grab sample results.
- A computerized maintenance management system was implemented, logging over 4,700 pieces of plant equipment with preventive maintenance schedules established.
- An Automated Meter Reading program was completed with the installation of 154,000 residential meters. It now takes one individual 20 workdays each calendar quarter to drive by and read the automated residential meters. That's a significant improvement over the 1,380 workdays it previously took for 23 Meter Readers to walk the routes and manually read the meters.
- Access at many residences was difficult and usage at many accounts had to be estimated. With automated meters, the use of estimates for billing purposes is now rare.
- In the Water Engineering Section, there had been two separate groups with separate managers for "Plants" and "Water Mains." Personnel had either "office" or "field" positions. The two have merged, and after cross-training, employees now fill in wherever they are needed. Office personnel get out into the field to inspect work they helped design and to learn the strengths and weaknesses of their designs from those who use them.
- A single entry of accounting information now produces financial reports in both Public Service Commission and City reporting formats, an enormous improvement over manually keeping two sets of books.

Noting these significant improvements, AMWA President John P. Sullivan said, "Milwaukee and the other award winners are applying best management practices to meet the public's requirements for safe water and low-cost service. They are a credit to their communities."

The other city-owned utilities honored were Bellevue, WA; Birmingham, AL; Clarksville, TN; District of Columbia; New York; Oceanside, CA; and Tampa Bay, FL.



Commissioner Skip Schifalacqua credits MWW employees for their innovation and commitment to excellence, recognized by the AMWA Gold Award they won. (foreground). With the commissioner at the meeting with Customer Service and Administration employees are MWW Superintendent Carrie Lewis and Administration and Projects Manager Dale Mejaki.

Milwaukee Water Works for Business

Milwaukee Water Works provides a competitive edge for business in the Milwaukee area. In 2003, the Milwaukee Water Works (MWW) began a marketing program to promote its abundant supply of low cost, safe drinking water among all of its customers. Of particular concern is encouraging water-intensive industries to expand or locate in the Milwaukee service area. The addition of customers spreads operational costs over a larger rate base, enabling the utility to keep water costs down. And, the vitality of industry in the area benefits the regional economy.

Water is the lifeblood of many manufacturers, food processors and brewers, biotech researchers, and the medical community. Across the country, water-intensive industry faces dwindling water resources due to multi-year droughts, depletion of groundwater, restrictive water quality regulations, and overpopulation of arid lands. The increasing demand for water and sewage treatment translates to higher operating costs for these businesses.

The Milwaukee area offers a long-term solution for water-intensive business as the Milwaukee Water Works provides a competitive edge for water-intensive business and industry with these benefits:

1. **Excess capacity** — With Lake Michigan, the sixth largest freshwater lake on earth, as the source of its water, the Milwaukee Water Works offers water-intensive industry an abundant supply of treated water at a consistent, reliable pressure. MWW provides drinking water to 831,000 people in Milwaukee and 14 neighboring communities. Wet industries benefit from the utility's excess capacity. Operating at one-third its rated plant capacity, MWW pumped 46.1 billion gallons in 2003, an average 126 million gallons per day.
2. **Stability in water cost** — Stability in water cost is secured by an abundant supply of water, rate structures, sound financial and competitive business practices, and a long-term infrastructure maintenance program. The Milwaukee Water Works is owned by the City of Milwaukee and revenues are reinvested in the utility to offset future rate increases. Except for major plant upgrades during the mid-1990s, all operating and capital expenses are 100% cash-funded. MWW is actively seeking new customers to increase revenue and broaden its rate base.
3. **Competitive cost** — A recent study found Milwaukee's water and wastewater rates are highly competitive regionally and nationally. The study, commissioned by the Milwaukee Metropolitan Association of Commerce (MMAC), the City of Milwaukee Department of Public Works, and the MMSD, analyzed water and wastewater rates charged to industrial users in the Milwaukee area.
 - Milwaukee ranked 1st for lowest cost potable water and sewer service charges for typical process wastewater industrial customers among 16 "comparable metro" areas.
 - Milwaukee ranked 3rd for lowest cost water and sewer service charges for those same customers when compared to 20 other Midwest metro areas.
 - Milwaukee ranked 7th for lowest cost water and sewer service for medium-sized process industries when compared to the 14 "least expensive" U.S. metropolitan areas.
4. **Superior water quality controls** — MWW water surpasses all federal and state standards for water quality. The utility provides continuous sampling of its water. While the U.S. Environmental Protection Agency and the Wisconsin Department of Natural Resources require testing for 90 regulated contaminants, the Milwaukee Water Works tests for over 425 different contaminants each year. Our latest water quality report is available at www.water.mpw.net.

The multiple barriers of the automated, ozone disinfection/biological filtration treatment process allow ever more stringent regulations to be met without changes to treatment operations. Yearly improvements in the water main flushing program, including a new technique called Unidirectional Flushing, represents another tool to ensure that distribution system water quality remains high.

- 5. Abundant, high quality water is conducive to water-intensive industry use** — Water quality, coupled with reliable water pressure, a relatively consistent temperature and low total dissolved solids provides an ideal platform for manufacturing, processing, and research. Some of the values of Milwaukee water are:

- Hardness: 8 grains per gallon = 136 mg/L (as CaCO₃)
- PH average value: 7.50; range 7.2 – 7.9
- Low Total Dissolved Solids (TDS): 180 mg/L; range 122 – 162 mg/L
- Temperature average: 46 degrees F; range = 32 – 70 degrees F

- 6. Regional availability of MWW water** — Milwaukee water is distributed in a wide metropolitan service area of 172 square miles with the capability to expand. The service area currently includes Brown Deer, Butler, Greendale, Greenfield, Hales Corners, Menomonee Falls, Milwaukee County Grounds, New Berlin, Shorewood, St. Francis, Wauwatosa, West Allis, West Milwaukee, an area of Franklin, and an area of Mequon through We Energies Water Services.

- 7. Superior customer service** — MWW provides a conscientious partnership with business and industrial customers. The Water Quality Manager is available during business hours for answers to questions about MWW water while a 24-hour Control Center covers after-hours concerns and emergencies. Commercial Meter Readers read the meters of our 1,000 largest customers on a monthly basis, and compare current usage to past usage to identify changes in season or monthly patterns and report discrepancies for timely corrective action.

- 8. Security conscious to ensure service** — To ensure continuous water service, considerable, ongoing efforts have been undertaken to improve the physical, cyber, and procedural security of MWW water plants and other infrastructure. Periodic emergency response exercises ensure the integrity of the utility's disaster response plan.



Milwaukee Water Works for Business

- 9. Continuous improvement and Use of Best practices** — The Milwaukee Water Works has adopted a strategy to operate as efficiently as possible. The Association of Metropolitan Water Agencies recognized the utility in 2003 with a Gold Award for Competitiveness Achievement for applying best management practices to meet the public's requirement for safe water and low-cost service.

MWW works in partnership with the Milwaukee Health Department, the Wisconsin Department of Natural Resources, and the MMSD. We meet as an interdisciplinary group of professionals involved in water treatment and public health. We review and discuss water treatment processes and system operation, source water impact and influences, health issues, and emerging research.

Through participation and contributions to American Water Works Association Research Foundation projects, Milwaukee joins other utilities using best practices in the industry.

- 10. Diligent infrastructure maintenance** — The MWW repairs and maintains 1,954 miles of mains in the water distribution piping system throughout the City of Milwaukee and the retail suburbs of Greenfield, St. Francis, and Hales Corners to ensure continuous delivery of sufficient high quality water. Scheduled activities include repair and maintenance of facilities within every upcoming paving project area, annual flushing of dead end water mains, leak surveys to identify non-surfacing water leaks, and a hydrant inspection program.

Our capital improvement program provides a long-term template for infrastructure improvements. It addresses treatment processes and facilities, pumping and storage facilities, and water main replacements. Production facilities were completely overhauled in the mid-1990s, so the emphasis currently is on remote pumping and storage facilities and the distribution system. Preventive maintenance also is an important component of our assurance that all infrastructure is in top functional condition.

2003 Recap

The Milwaukee Water Works is a self-financing business enterprise of the City of Milwaukee. The utility collected \$69.8 million in 2003 to finance its operations. The Water Works paid to the city \$7.72 million, in the form of a payment in lieu of taxes. The payment in lieu of taxes directly offsets the city tax levy, reducing the 2003 tax rate by \$0.36 per thousand dollars of assessed valuation. Other 2003 payments to city departments for the municipal services used by the water works totaled \$8.95 million.

Business Section

Accounting Services

Accounting Services provides financial reporting on the water works' operations in compliance with Generally Accepted Accounting Principles. It assures that the water works financial operations are within city budgetary constraints and administers payroll for the utility's 350 employees.

Accounting Services plays a key role in the relationship Milwaukee Water Works has with the Wisconsin Public Service Commission by serving as liaison with Public Service Commission staff. The group prepares and transmits the documents used to assure the PSC that the Milwaukee Water Works is complying with its regulations. In 2002, the PSC granted the MWW an overall water rate increase of 10%. A Milwaukee typical single-family residential account increased from \$37.84 to \$41.59 per quarter (based on 23Ccf or 17,205 gallons). This rate remained in service throughout 2003.

Meter Services

To consolidate operations and improve productivity, the Meter Reading unit was moved mid-year from the Zeidler Municipal Building to the Meter Repair Shop on South Kinnickinnic Avenue. The administrative office area was remodeled to provide two new office spaces and room for clerical staff and the meter readers/investigators.

Residential water meters are read quarterly. In 2003, over 607,200 readings were completed by the computer-equipped van as it drove down streets and over 14,000 were performed manually. Commercial Meter Readers manually read the meters of our 1,000 largest customers on a monthly basis. This operation was performed 20,543 times. Many of these large meters are located in underground vaults; confined space entry and air monitors are required to safely read these meters. Commercial Meter Readers compare current usage to past usage to identify changes in seasonal or monthly patterns and report discrepancies for timely corrective action.

Water Meter Investigators provide investigative services to customers who report high bills and questionable account information. They make personal visits to customers' locations to verify meter, address and water status information. They also perform inspections of interior plumbing fixtures to locate leaks for residential and small commercial customers. In 2003, nearly 8,000 investigations were completed.

The Meter Repair Shop facility and personnel enable MWW to ensure that water meters are accurately representing water consumption, giving the customer fair value and the water works its appropriate revenue for water delivered. Large and small water meters are tested and repaired at this facility. Staff install, exchange, and test meters in the field.

Water meters range from 5/8-inch to 12 inches and range from 12 pounds to 3,300 pounds. (The size of a water meter refers to the diameter of the pipe at the inlet of the meter.)

The program to change medium-sized meters (1.5" to 2") to automatic meter reading meters reached the 95% complete milestone in 2003, with 4,390 units installed. Meter Shop personnel have adapted to all the demands of the AMR projects. All job classifications have demonstrated their skill in meter installation, but also solving all types of electronic, plumbing, low pressure, and customer service issues in the field and shop. This diversely skilled work force will prove to be a valuable asset in the continued maintenance of the new AMR systems.

During 2003, the Meter Shop installed over 195 hose connections and handled over 112,000 linear feet (over 21 miles) of hose. These hose connections have enabled businesses, day care centers, etc. to remain open while repairs were being performed on the water mains. Meter Shop personnel are on call 24 hours a day to support these activities.

A hot water thawing unit was purchased in 2003, which is used to thaw frozen pipe by injecting a stream of warm water into the frozen service pipe to melt the ice. Meter Services personnel have used this piece of equipment with success and in most cases were able to thaw the service pipe in minutes.

Customer Service

The Customer Service Section responds to customer inquiries over the phone and at the MWW service counter in the Zeidler Municipal Building. Customer Service Representatives meet customers' needs ranging from resolving billing inquiries to scheduling meter reading appointments.

The MWW Interactive Voice Response (IVR) system allows customers to access account information about their municipal services bill by telephone 24 hours a day. In 2003, the IVR system processed 135,294 calls. Some customers preferred to speak directly with our Customer Service Representatives; 62,636 customer contacts were handled in this manner. In 2003, the walk-up customer service and cashiering stations handled 4,009 customer inquiries, 56,946 counter cashiering transactions and processed 47,727 payments that were dropped off at the customer service office.

Marketing Initiative

In mid-2003, MWW added a full-time marketing specialist to raise awareness of the benefits of Milwaukee's water quality, quantity, and value. The marketing specialist encourages water-intensive industries to expand or locate in the Milwaukee area and serves as liaison with existing larger water customers.

By year's end, MWW had established marketing relationships with the Metropolitan Milwaukee Association of Commerce, Milwaukee



Hawley Storage Facility

Economic Development Corp. and Department of City Development, Forward Wisconsin, Spirit of Milwaukee, and Milwaukee Downtown. Another primary focus of the marketing plan is to promote the water works among all customers as the source of the region's pure quality drinking water. To that end, the marketing specialist conducted educational outreach that included school and environmental festivals and signing on as a Water Partner with Pier Wisconsin, home of the *Denis Sullivan* lake schooner.

Billing and Collections

The Billing and Collections Sections generate and collect the municipal services bills, which include charges and fees for water, sewer treatment, sewer maintenance, solid waste collection and ice and snow removal. In 2003, billing statements totaling over \$144 million were mailed to 160,966 customers on schedule. This resulted in \$133,411,515 being deposited into the various funds covered by the bills.

The relationship between the Village of West Milwaukee and the Milwaukee Water Works began in 1911 with the village becoming one of the utility's first suburban retail customers. In 2003 this relationship took another step with the Milwaukee Water Works providing billing services for the village's sewer payments.

Technical Services Section

The Technical Services Section maintains the Water Works' information-processing network. During 2003, the section continued to upgrade MWW's desktop PCs from Microsoft Office 97 to Microsoft Office 2000. A significant effort was required to recreate Excel spreadsheets, used by the Plants Section for calculation and reporting, in visual basic. Technical Services is responsible for primary support for Water Works GIS (Geographical Information System) and Water Main and Plant Design systems in 2002. Two GIS NT 4.0 servers were replaced with Windows 2000 servers in 2002. Migration of GIS printing services that reside on one of the servers was completed in 2003.

Technical Services worked with outside consultants on the process of making the Supervisory Control and Data Acquisition (SCADA) computer network more secure. The process of logically and physically separating it from the rest of the network to better prevent unauthorized access and hacker attacks was started in 2001, continued in 2002 and was continued in 2003. This process will be ongoing in future years.

During 2003, every section of the utility worked together to begin replacement of the Customer Information System (CIS). A consultant assisted in writing and publishing a request for proposals (RFP), and 13 vendors submitted responses. After an extensive review process four were asked to present live demonstrations of their product. These demonstrations were conducted in December. The utility will complete the evaluation process with the goal of securing a vendor and producing a test environment for a new system late in 2004. This will allow the utility to start using the new CIS in 2005.

Distribution Section

Water Distribution repairs and maintains the water distribution piping system throughout the City of Milwaukee and the retail suburbs of Greenfield, St. Francis, and Hales Corners to ensure continuous delivery of sufficient high quality water to all customers of the Milwaukee Water Works. Distribution employs quality repair practices using high

quality parts and materials. Preventive maintenance systems have been evolving into the core of distribution operations. Scheduled activities include repair and maintenance of facilities within every upcoming paving project area, annual flushing of dead end water mains, leak surveys to identify non-surfacing water leaks, and a hydrant inspection program. Distribution has been progressive in researching and implementing new technologies in materials, repair parts, and equipment as well as staying abreast of new developments in maintaining distribution systems to provide a quality conduit to deliver potable water.

Emergency repairs continue with an aging infrastructure. Distribution professionals conducted 11,257 investigations for various reasons such as reports of leaks in the street and concerns from our customers. Water Distribution Supervision on duty or on call assesses each emergency situation and determines the necessary action. Repair Crew employees responded to 1,092 call-outs for emergency, after-hour repair needs. This ensured maintaining water service to our customers with the least amount of interruption as well as maintaining the integrity of the water distribution system. In 2003, distribution repaired 851 main breaks in addition to repairs to service laterals, hydrants, valves, and curbstops.

Distribution coordinates new water main installation projects with various contractors to plan the water shut off requirements, operate the necessary valves for the water shut off, coordinate water outages with affected customers, provide pipe cutting services with specialty saws for large diameter water mains, and return the water main to service.

Generous Delivery

Milwaukee Water Works Distribution employees collected six tons of food in one day as a grand finale to their summer food drive for area children.

The day after Labor Day, the people usually seen performing such duties as repairing water mains and flushing fire hydrants unloaded two trucks carrying 3,757 cans and boxes of food at the Second Harvest Food Bank and the Hunger Task Force. Food pantry officials said the items weighed a total six tons.

Food pantries are typically in low supply during summer when school meal programs aren't available for children. Every payday Friday, from June through August, the 145 employees contributed items that were then delivered to the food pantries. The total number of items collected during the entire summer was 5,693.

A friendly competition arose between the north district Cameron Yard and the south district Lincoln Yard. The race to win resulted in the colossal outpouring of generosity during the final week. Distribution Manager Laura Daniels said the real winners in the competition were the children of Milwaukee, and she congratulated the Distribution section employees for their efforts to help them.



Making the six-ton delivery are (l-r) Billy Allen, Dennis Beber, Laura Plizka of Second Harvest, Melinda Grabowski, Jim Zalewski, and Gil Taylor. Vince Maniscalco, who was key to the south side drive, was not available.



Lincoln Storage

Distribution also works closely with the paving programs of the City of Milwaukee and suburban communities to coordinate preventive maintenance activities. Prior to paving, the water distribution system is reviewed in detail for possible improvements such as additional shut off valves and the elimination of unused piping that if left in service could potentially cause future leaks. All valves are exercised and repaired or replaced as needed, service lateral access boxes are located and inspected to make sure the curbstop is accessible and operable for any future shut off needs. Leak surveys are conducted to detect any underground leaks. The goal is to ensure that buried water infrastructure is in good operating condition prior to the road above being paved. This maintenance program has successfully reduced the incidence of disruption to new pavement for emergency repairs.

Leak detecting has taken on a greater focus as the water distribution system ages. Underground leaks can sometimes go undetected as water seeps into other underground voids. The use of a leak correlator provides a mechanism to detect these leaks that do not surface, helps identify needed repair activities and reduces the need for future emergency repairs. The leak correlator uses highly sensitive microphones attached to valves or services. Data about the pipes is entered into the computer, the sound is analyzed, the location of the leak is pinpointed, and repairs are made.

The Hydrant maintenance and inspection program is conducted by four dedicated Hydrant Service Workers. These employees inspected 9,076 hydrants in 2003 using portable handheld computers to scan the bar code affixed to the hydrant and input all related inspection data into that specific hydrant record. In addition, while flushing each hydrant during the inspection process, the water is sampled using a portable turbidimeter to ensure that the Milwaukee Water Works' water quality standards are met or exceeded throughout the distribution system. Any hydrant defects noted from the inspection are reported for repairs and if a hydrant is found to be inoperable, the Fire Department is promptly notified of the out-of-service status as well as when the hydrant repair is complete. For further identification of hydrants, plastic rings were installed to provide fast identification of dead end main hydrants, hydrant out of service, restricted use hydrants and private hydrants, which are not installed nor maintained by the Milwaukee Water Works. We work closely with the fire departments of Milwaukee, Greenfield, Hales Corners, and St. Francis to ensure a well-communicated fire protection program.

Engineering Section

The Water Engineering Section continues to function as an in-house resource for the utility. The section is responsive to applied research needs of the utility and coordinates the Capital Improvements Program (CIP). The 2003 budget for CIP totaled \$14.9 million with \$11.6 million to replace water mains and \$3.3 million for water treatment process and facility improvements. Capital improvement projects are specifically planned to increase efficiency and maintain the reliability of the entire Milwaukee Water Works system.

In 2003, Engineering Section staff also continued to support the operation and maintenance of facilities by providing consulting engineering services for a number of projects. Construction of a metal-clad high voltage switchgear at the Riverside Pumping station began and was nearing completion at year's end. A project involving the abatement of lead paint also began at the Riverside Pumping Station. MWW security priorities led to the design and construction of a new entranceway at the Howard Avenue Treatment Plant. Significant design efforts were involved in two other projects – a roof for the Howard Avenue east clearwell and renovation of the second floor of the chemical building of the Howard Avenue Plant.

Water Engineering staff prepared plans and specifications for 1.2 miles of new water main extensions and 9.2 miles of replacement water mains. One hundred thirty-six plans were prepared for these installations within the City of Milwaukee. Projects coordinated directly with the DPW Infrastructure's Construction Section involved three emergency relays, three feeder main valve replacements, and four feeder main repairs. Plans were

Hawley Road Makeover

This makeover took three months. A crew of painters applied a new coat of paint to the Milwaukee Water Works' (MWW) two-million-gallon Hawley Tank, located at the top of the hill on Hawley Road north of State Street. The \$1 million project, undertaken by the George Kountoupes Painting Co., involved abrasive blasting, prime, intermediate, and finish coating for all exterior and interior surfaces. The project was finished



A protective canopy was dropped from the top of the tank to contain the painting project.



A painter perches high atop the Hawley Tank while completing detail work during the tower's repainting in Fall 2003.

on time and within budget. After painting, MWW crews refilled the tank and conducted water quality testing to bring the tank back into service by Oct. 31. The grounds around the tower were restored in spring.

designed and reviewed for 23 alterations of water mains for various external projects. Plans were reviewed and approved for seven suburban projects.

Additionally, staff continued performing the strategic review and planning for the construction of the new Marquette Interchange of I-90/94 and its impact upon the Milwaukee Water Works facilities. The first phase of water main work in West Clybourn Street and Tory Hill was reviewed and included in the state contract for this project. Continued work on the upcoming "North Leg" and "Core" phases will continue in 2004. New streets and development needs along North Water Street required relaying and abandonment of several water mains.

Staff also maintained and updated the Milwaukee Water Works distribution and transmission system map and conducted daily updates within MWW customer service software. Information relating to location of water mains, valves, services, and hydrants are provided to this section and it is graphically represented on the maps and the data entered within a customer service database. The accuracy and integrity of these maps and the data are essential to the day-to-day operations of the utility.

Permit applications for installation and alteration of the facilities of private utilities in public ways are reviewed for their impact on the water system. Permit applications for buildings also are reviewed. The staff reviewed over 1,000 permits in 2003.

Water Engineering provides flow and pressure information to plumbing contractors and fire protection companies. This information is used in the design of interior plumbing and sprinkler systems. As the distribution system changes, new flow tests are conducted by Engineering staff to ensure accurate information is being supplied to fire protection companies. In 2003, staff conducted 77 fire flow tests, of which 16 were done at the request of an outside agency. When these specific requests are made and performed, the outside agency covers all costs for the flow test. In order to provide quality control of pressure within the distribution system, Water Engineering installs and monitors remote pressure recorders at several locations during the warm weather months.

The Water Engineering Section assisted the Village of Brown Deer in implementing a Unidirectional Flushing project within the borders of the village. Unidirectional flushing is a step-by-step process of closing valves to create one-way flow in a water main loop and then opening hydrants in a set manner. The higher velocity of water produces a scouring action in the pipes, removing even the most stubborn deposits. The Milwaukee Water Works has conducted several Unidirectional flushing projects, within its system and had experienced successful results in improving water quality with the process. Unidirectional flushing, and conventional flushing methods, is continually being utilized and evaluated by the Milwaukee Water Works.

Water Engineering put to contract a type of pipe that was new to the Milwaukee Water Works and which also utilized a new method of installation. Approximately 1,200 feet of high-density polyethylene pipe (HDPE) was installed by directional bore in West Brown Deer Road to eliminate two dead ends and to provide better service to the customers in the area. This method was chosen to reduce the disruption to the adjacent property owners, to eliminate the need to cut into the concrete pavement in West Brown Deer Road. A limited number of other utilities in the location made it convenient to use directional boring. The total working days proved to be considerably less than with the open cut method of construction. This specific project will continue to be monitored by the Milwaukee Water Works to determine the long-term success of this type of material and installation, especially where conditions are favorable.

Distribution material inspections assure that only materials meeting Milwaukee Water Works' high standards are installed in the distribution system. After being received by the

Stores Division, all materials are visually inspected for compliance with city specifications. In many cases, these items are hydrostatically tested at design pressures. Water Engineering staff responded to 308 requests for inspection. The inspections were for various purchases delivered to MWW such as hydrants, valves, fittings, etc. The 308 requests translate to 29,609 pieces of material. The staff also inspected fittings furnished by the contractor.

Water Quality

Regulatory monitoring to assure compliance with the Safe Drinking Water Act was a large part of the Water Quality Section's responsibilities. MWW continued compliance with requirements of the new Interim Enhanced Surface Water Treatment Rule. This regulation set tighter filtered and finished water turbidity standards, established new monitoring requirements for individual filters, and requires monthly verification and documentation of filter performance. To meet these new requirements, Water Quality staff redesigned monthly report forms, changed the standard operating procedures for individual filter turbidimeters, and conducted challenge studies to verify online instrument performance.

Staff completed ozone contactor tracer studies at the Linnwood Plant in 2003. These studies measure the transit time of the water through the contactor at various flow rates. It is necessary to know this transit time in order to calculate disinfection effectiveness. Water Quality Section staff designed the study, collected and analyzed hundreds of samples, and will submit the final compliance report to the Department of Natural Resources.

The Water Quality Section responded to 140 calls from customers regarding water quality issues in 2003. This is the lowest annual number of calls to the Water Quality Hotline since it was established. Operation of the 24-hour water quality voice messaging line, coupled with follow-through to address issues and arrange for field visits as necessary, assured our customers of the utility's commitment to providing the best water quality.

Water Treatment Plants

In 2003, the MWW Plants Division provided 46.1 billion gallons of water, a 0.3% decrease from 2002. As seen in the table, Linnwood pumpage increased while the Howard pumpage decreased in 2003.

Plant	2003 Pumpage Million Gallons (MG)	2002 Pumpage MG	Difference MG	% Difference
Linnwood	27,255.41	26,523.81	731.60	2.8
Howard Ave.	18,846.81	19,729.63	-882.82	-4.5
Total	46,102.22	46,253.44	-151.22	-0.3

Kilbourn Reservoir Decommissioning

The shift in pumpage may be explained by the completion of the first phase of the Kilbourn Reservoir Decommissioning Project. To accommodate a lower demand in the low service district, two of the three low service pumps at the Northpoint Pumping Station were replaced with appropriately sized pumps during 2003. Low service pumps #5 and #6 were originally 26 million gallons per day (MGD) pumps. Pump #5 was replaced with a variable speed pump capable of delivering 2-8 MGD and pump #6 was replaced with a 10

MGD pump. Low service pump #7 was not replaced and is capable of delivering 26 MGD if needed. A bypass was installed at the Howard Avenue Plant to relieve pressure. New suction valves were installed on the new pumps as well as new flow meters for all the low service and by-pass discharge lines. A pressure-reducing valve was installed in the mains near the Kilbourn Reservoir to supply water from the high service district to the low service district.

Having these new pumps available for low service district shifted the low service supply from the Howard Plant to the Linnwood Plant. This system will be tested in 2004 prior to decommissioning the reservoir. The project was undertaken as a cost saving alternative to replacing the reservoir while still maintaining pressure and flows in the low service district.

Linnwood Treatment Plant

Restructuring of plant staffing continued in 2003. In April, the Plants Operations Section implemented a sixth shift schedule. This added an extra shift of two Senior Water Plant Operators (SWTPO) and one Water Plant Operator (WTPO) to the Operation's shift schedule. This extra crew enables Operators to be available to perform more complex plant operations and preventive maintenance tasks.

As a result of the additional Operations staff, the Linnwood Plant was able to perform complete filter inspections on nine of Linnwood's 32 dual-media filters. In addition to assisting the Water Quality Section and a MWW consultant with detailed analytical analysis of each filter, Operators added over 132,000 pounds of anthracite filter media and replaced over 28,000 filter nozzles.

MWW Maintenance staff reorganization of job titles was completed. Skills criteria were developed and employees were evaluated and promoted to new and more challenging positions. This increased the workforce flexibility and efficiency.

During the spring of 2003, the Water System Operators-in Charge (WSOIC) were temporarily relocated from the Howard Avenue Plant to the Linnwood Plant. This was an opportunity to allow the WSOICs to interact with Linnwood staff during the testing of the new Northpoint low service pump at startup and to provide an opportunity to cross-train with Linnwood Operations staff.

Several other projects were undertaken during 2003. An electro-hydraulic filter effluent valve operator was tested and installed on a filter. This operator greatly enhanced the stability of the filter valve operation reducing filter modulations. In 2004 all the filters will be replaced with a similar effluent valve operator to improve overall plant filter operation and stability.

A number of activities were undertaken regarding the Linnwood ozone treatment process. Water Quality and Operations Sections conducted tracer studies on the Linnwood ozone contactors. These tracer studies were at various plant flows to determine the actual T10 contact time. In response to new EPA data on the effectiveness of ozone inactivation of *Cryptosporidium*, the ozone dose was increased during 2003. Also, Water Engineering staff created a request for proposal to replace the water bath oxygen vaporizers with electric vaporizers. This work will be completed in 2004.



Linnwood Water Treatment Plant

A number of security upgrades were conducted at Linnwood under the direction of the MWW Security Manager. All of the plant exterior buildings were re-keyed. In addition, card readers were installed on over half of the 50 exterior doors at the plant. Card readers were also installed at the entrance and exit gates. Staff members were issued a new form of security identification. Also, all of the SCADA system programmable logic controller cabinets were made more secure.

Installation of the new vacuum ammonia system, begun in 2000, was completed and initiated in November 2003. The system was retrofitted to include a softened water eductor system. This included the installation of two booster pumps, a backup water supply connection from the main house water system, two soft water resin tanks and three chemical feed eductors.

As part of a capital improvements project, the Riverside Pumping Station switchgear was replaced beginning in July. This was a major undertaking involving building a new switchgear building, new 35 kV switchgear and replacing all the 5kV switchgear doors and relays inside the station. The work was nearing completion by the end of the calendar year.

The Plant Automation Division coordinated performing a vibration analysis on eight of the nine high service pumps at the Riverside Station. This data will enable plant staff to precisely determine which pumps are in the most need of major repairs and to track the continuing performance of each pump.

Another capital improvement project was the replacement of the flocculator bearings and shafts in the northwest coagulation basin. In addition, five large isolation gates were also replaced including the northwest coagulation basin inlet gate and the coag drain gates and coag drain to the lake gates for the northwest and northeast coagulation basins. With the assistance of Water Engineering, a crack was repaired in upper deck of the northeast coagulation basin.

In the summer of 2003, the MWW Safety Specialist initiated a service contract with a vendor to inspect and service all of the fire extinguishers for the Linnwood Plant. The vendor will come on site twice per year to inspect and maintain as needed. Also, under the MWW Safety Specialist's direction, the Plants Section modified the annual safety refresher training to conduct two-hour sessions, four times per year. This schedule was deemed more advantageous with the 24-7 shift operators and reinforced MWW safety policies and guidelines throughout the year.

The MWW plants continued to participate with Milwaukee Area Technical College (MATC) Environmental Pollution Technology student intern program during the spring of 2003.

A number of other activities and projects were undertaken during 2003:

- Field-tested an ultrasonic filter bed level detector. This is used to determine the amount of filter bed expansion during a filter backwash.
- Field-tested a new fluoride on-line residual analyzer at a new sample point
- Refurbished Linnwood lobby marble floors
- New phosphoric acid metering pumps were installed.

Howard Avenue Treatment Plant

In 2003, the Howard Avenue plant pumped 18.8 billion gallons of treated water. This is slightly less than the 20.2 billion gallons pumped in 2002. The 2003 cost of chemicals for treatment was \$29.61 per million gallons (MG). The electrical energy costs were \$67.16/MG.

Operating efficiencies resulted in a 2.3 % decrease in the cost/ MG for chemical treatment from 2002. However, increased energy costs resulted in an 11.5% increase in electrical operating costs/MG of treated water. The combined increase in operating costs from chemicals and electric power was 6.9%.

In April 2003 the operations division implemented a sixth shift schedule. No change was made in the number of employees. Creation of the sixth shift made more employees available to perform complex plant operating and preventive maintenance tasks during the day shift.

The Maintenance Division reorganization of job titles was also completed in 2003. Skills criteria were developed and employees were evaluated and promoted to new titles. This increased the workforce flexibility and efficiency. The division completed over 500 preventive maintenance tasks and over 100 demand repair tasks.

Operations and maintenance personnel replenished anthracite and replaced the surface wash nozzles on all filters in 2003. Operations personnel also started performing comprehensive filter inspections, which previously were performed by a contractor. The operations crews calibrated all chemical feed pumps.

Several other projects were undertaken at the Howard Avenue Plant during 2003. The services of a diving contractor were enlisted to determine the source of a leak detected near the west clearwell. Evaluation was pending at this writing. The ozone dose was increased in response to EPA data on the effectiveness of ozone inactivation of *Cryptosporidium*. The engineering staff designed a ventilation system to remove a safety hazard caused by ozone off-gassing in the rapid mix area.

Operations staff tested the effectiveness of high speed mixers in aiding the mixing of ammonia. Results indicated shutting off the devices could save energy. A contractor evaluation of the east clearwell roof integrity indicated it was structurally sound. However, a rubber roof membrane will be installed to prevent runoff leakage into the clearwell. Contractors removed soil contaminated by an oil tank as part of a soil remediation project. Efforts continued to improve the physical, cyber, and procedural security of the water plant. Work began on a new Sixth Street entrance.

The interior and exterior of Hawley storage tank were painted and cathodic protection was installed to prevent corrosion. Refurbishing of a pump at the Menomonee Valley Station was awarded to a contractor with work to begin in 2004.



Howard Avenue Water Treatment Plant

Computerized Maintenance Management System

A relatively new technology to streamline workflow and enhance system reliability is the Computerized Maintenance Management System (CMMS), which includes over 5,030 pieces of equipment. In its third year of operation, maintenance and water quality staff completed 11,966 preventive work orders and 1,021 demand work orders. The CMMS group is looking at new software to continue to improve tracking, scheduling, and further automate the plants.

Milwaukee
Water Works

2003 Financial Report



KPMG LLP
777 East Wisconsin Avenue
Milwaukee, Wisconsin 53202-5337

Independent Auditors' Report

The Honorable Members of the Common Council of the City of Milwaukee:

We have audited the accompanying basic financial statements of the City of Milwaukee–Water Works (Water Works), an enterprise fund of the City of Milwaukee, Wisconsin, as of and for the year ended December 31, 2003 and 2002, as listed in the table of contents. These financial statements are the responsibility of the Water Works' management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in Note 1, the financial statements present only the Water Works and do not purport to, and do not, present fairly the financial position of the City of Milwaukee, Wisconsin, as of December 31, 2003 and 2002, and the changes in its financial position for the years then ended in conformity with accounting principles generally accepted in the United States of America.

In our opinion, the basic financial statements referred to above present fairly, in all material respects, the financial position of the City of Milwaukee–Water Works as of December 31, 2003 and 2002, and the changes in its financial position and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

The management's discussion and analysis on pages 23 through 28 is not a required part of the basic financial statements but is supplementary information required by accounting principles generally accepted in the United States of America. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of the required supplementary information. However, we did not audit the information and express no opinion on it.

KPMG LLP

April 30, 2004

KPMG LLP, a U.S. limited liability partnership, is the U.S.
member firm of KPMG International, a Swiss cooperative.

City of Milwaukee – Water Works Management Discussion and Analysis December 31, 2003 and 2002

The management of the Milwaukee Water Works offers readers of this organization's financial statements this narrative overview and analysis of the Milwaukee Water Works' financial statements for the fiscal years ended December 31, 2003 and 2002. Readers are encouraged to consider the information presented here in conjunction with the financial information.

The mission of the Milwaukee Water Works is to provide safe, reliable and aesthetically pleasing drinking water to the City of Milwaukee and 14 suburban communities.

Financial Highlights

- Total revenues in 2003 stayed relatively the same as the revenues in 2002 with only a (.27%) decrease from \$74.7 million to \$74.5 million.
- Total expenses increased by \$3.7 to \$56.5 million or 7% in 2003. The 2002 expenses were \$52.8 million.
- As of December 31, 2003 the Water Works outstanding debt consisted of \$14.5 million in revenue bonds through the State of Wisconsin Safe Drinking Water Loan Program and \$38.2 million in general obligation bonds for a total of \$52.7 million. As of December 31, 2002, total debt amounted to \$58.1 million, with \$15.3 million in revenue bonds and \$42.8 million in general obligation bonds.
- The Milwaukee Water Works is an enterprise fund within the primary government of the City of Milwaukee and as such is not subject to property taxes. In place of property taxes, the Milwaukee Water Works contributes to the City's tax levy by making a payment in lieu of taxes (PILOT). This amounted to \$7.7 million in 2003 and \$8.0 million in 2002.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the basic statements of the Milwaukee Water Works. The Milwaukee Water Works basic financial statements are comprised of two components: 1) the financial statements and 2) notes to the financial statements which explain in more detail some of the information in the statements.

Required Financial Statements

The financial statements of the Water Works report information about the Water Works using accounting methods similar to those used by private-sector companies. These statements provide both long-term and short-term information about the Water Works' overall financial status.

The statement of net assets presents information on all of the Water Works' assets and liabilities, with the difference between the two reported as net assets. This statement provides information about the nature and the amounts of investments in resources (assets) and the obligations to Water Works creditors (liabilities). It provides one way to measure the financial health of the Water Works by providing the basis for evaluating the capital structure of the Water Works and assessing the liquidity and financial flexibility of the Water Works. However, one will need to consider other non-financial factors such as changes in economic conditions, population and industrial/commercial customer growth, and new or changed government legislation.

All of the current year's revenues and expenses are accounted for in the Statement of Revenues, Expenses, and Changes in Net Assets. This statement measures the Water Works' results of operations over the past year and can be used to determine whether the Water Works has successfully recovered all its costs through its user fees and other charges.

The final required financial statement is the Statement of Cash Flows. The statement reports cash receipts, cash payments, and net changes in cash resulting from operations, financing and investing, activities. This statement identifies sources and uses of cash as well as the change in the cash balance during the reporting period.

Financial Analysis of the Water Works

Net Assets:

Net assets may, over time, serve as a useful indicator of an entity's financial position. In the case of the Milwaukee Water Works, assets exceeded liabilities by \$350,672,074 and \$338,413,567 at December 31, 2003 and 2002 respectively.

In Table A-1, it can be seen that the largest portion of the Water Works' 2003 net assets (85%) reflects its investment in capital assets (e.g., water mains, buildings, machinery and equipment) net of related debt. Also, as shown in Table A-3, Water Works water main system makes up approximately 53% of the capital assets in 2003. The Milwaukee Water Works uses these capital assets to provide safe reliable and aesthetically pleasing drinking water to its 831,000-customer base in the City of Milwaukee and 14 surrounding communities.

The Milwaukee Water Works investment in capital assets is reported net of related debt. The resources to repay this debt must be provided from operating and non-operating activities as the capital assets themselves are not intended to be used to liquidate these liabilities.

The remaining 14.6% of net assets are unrestricted and represent current assets (e.g., cash on hand for operation, cash held in the local government investment pool, accounts receivable and inventory and materials).

As can be seen in Table A-1 capital assets net of related debt increased by \$7.4 million. This increase in capital assets net of related debt was mainly due to a large increase in contributed capital in 2003. The amounts of contributed capital were \$2,053,370 and \$356,174 for 2003 and 2002 respectively.

New depreciation rates that were in effect for only seven months of 2002, were in full effect for 2003, resulting in only a moderate increase of \$2.0 million in net capital assets as shown in Table A-3.

Table A-1 Condensed Summary of Net Assets

	2003	2002	Amount of Change	Percentage Change
Assets				
Total Current Assets	\$57,850,903	\$51,494,128	6,356,775	12.34%
Net Capital Assets	352,031,865	349,961,312	2,070,553	0.59%
Total Assets	409,882,768	401,455,440	8,427,328	2.10%
Total Current Liabilities	12,289,042	10,406,276	1,882,766	18.09%
Total Noncurrent Liabilities	46,921,651	52,635,597	(5,713,946)	(10.86%)
Total Liabilities	59,210,693	63,041,873	(3,831,180)	(6.08%)
Net Assets				
Invested in Capital Assets, net of related debt	299,299,247	291,862,961	7,436,286	2.55%
Unrestricted Net Assets	51,372,827	46,550,606	4,822,221	10.36%
Total Net Assets	\$350,672,074	\$338,413,567	12,258,507	3.62%

While the Summary of Net Assets (Table A-1) shows the amount of net assets, the Statement of Revenues, Expenses and Changes in Net Assets (Table A-2) provides answers as to the nature and source of the changes. A review of Table A-2 shows that operating revenues decreased \$45,454 or (.1%) and total expenses increased by \$3.7 million or 7.1%. Factors which drove these results include:

Revenues:

- 2003 water revenues and water consumption were almost unchanged from the previous year. Operating revenues decreased by \$45,454 and the gallons sold decreased by 479.0 million gallons.
- Unbilled accounts receivables were \$9,882,043 and \$9,668,731 for 2003 and 2002 respectively, with an increase of only \$213,312. In 2002, a new method of calculating unbilled accounts receivable was developed, through the billing system, which utilized actual billing information. This methodology resulted in a more accurate accrued revenue amount. This new calculation of unbilled accounts receivable required an adjustment of \$3.4 million for 2002. The same method of calculating unbilled accounts receivable was used in 2003 and the year-to-year level of unbilled accounts receivable stayed in the same range.

Expenses:

The \$3.7 million increase in expenses is attributed to the following:

- Other Operating Expenses increased by \$4.1 million or 10.9% in 2003. The major portion of this increase was due to transmission and distribution expenses, which increased by \$2.9 million. The major causes of this increase were as follows:
 - A major project was started in 2003 that involved painting and maintaining the Hawley Road Tank. The cost of this project was the largest factor in the increase in expenditures for 2003. There was no similar project in 2002.
 - The water system is getting older which increased expenditures to maintain the system. Additionally, the water system pressure level was increased in 2003. This pressure increase caused more water mains to fail and required more maintenance expenditures.
 - In January and February 2003, the Utility experienced 432 water main breaks, the highest number in this period in over ten years. This was attributed to frost penetrating deep into the ground due to cold temperatures and a lack of insulating snow cover on the ground. Labor and material costs were higher than normal to repair these breaks.
 - In 2003, the 6-month management pay freeze in effect for 2002, was lifted and a cost of living adjustment was paid to management employees.
- Non-Operating Expenses, which is mainly interest expense, decreased in 2003 by \$292,613. In 2002, there was a decrease of \$161,000. These were due to lower interest rates on borrowed money.

Table A-2 Condensed Summary of Revenues, Expenses and Changes in Net Assets

	2003	2002	Net Increase (Decrease) Amount
Operating Revenue	\$73,814,123	\$73,859,577	(45,454)
Non-Operating Revenue	668,741	826,136	(157,395)
Total Revenues	74,482,864	74,685,713	(202,849)
Depreciation Expense	11,928,616	12,027,348	(98,732)
Other Operating Expenses	42,072,263	37,948,141	4,124,122
Non-Operating Expenses	2,552,893	2,845,506	(292,613)
Total Expenses	56,553,772	52,820,995	3,732,777
Income before Capital Contributions and Transfers	17,929,093	21,864,718	(3,935,625)
Capital Contributions	2,053,370	356,174	1,697,196
Transfers In	0	7,395,084	(7,395,084)
Transfers Out	(7,723,956)	(7,974,459)	250,503
Changes in Net Assets	12,258,507	21,641,517	(9,383,010)
Beginning Net Assets	338,413,567	316,772,050	21,641,517
Ending Net Assets	350,672,074	338,413,567	12,258,507

Capital Assets and Debt Administration

Capital Assets:

As of December 31, 2003, the Milwaukee Water Works investment in capital assets amounted to \$352,031,865 (net of accumulated depreciation). This is an increase of \$2,070,553 from year 2002. The increase is explained, in part, by an increase in capital contributions to \$2,053,370. Additionally, depreciation rates were changed in 2002. These new rates were in effect for the entire 2003. The effect of the new rates in 2002 was only for the last seven months of the year. This change was authorized by Public Service Commission ("PSC") rate order 3720-WR-104 (effective June 1, 2002). The Milwaukee Water Works calculates depreciation based on composite groups of assets within a given category and the average useful life. These categories are building & improvements, machinery & equipment and transmission and distribution systems. Each group's depreciation is then calculated using a rate authorized by the latest PSC rate order.

Table A-3 Capital Assets

	2003	2002	Net Increase (Decrease) Amount
Capital Assets: Land	\$1,567,911	1,585,341	(17,430)
Buildings	22,361,767	22,430,386	(68,619)
Transmission and Distribution System	266,638,590	261,642,850	4,995,740
Machinery & Equipment	192,358,519	188,695,880	3,662,639
Construction in Progress	16,439,912	12,210,173	4,229,739
Nonutility Property	540,298	540,298	0
Total Capital Assets	499,906,997	487,104,928	12,802,069
Less Accumulated Depreciation	(147,875,132)	(137,143,616)	10,731,516
Net Capital Assets	\$352,031,865	349,961,312	2,070,553

Investment Administration:

As an Enterprise Fund within the primary government of the City of Milwaukee, the Milwaukee Water Works does not have a direct investment plan. As such, cash not in use for day-to-day operation is invested through the City of Milwaukee in the State of Wisconsin's Local Government Investment Pool (LGIP) and/or other types of investment instruments as determined by the City Treasurer. In 2003, the City Treasurer invested \$15.0 million of Water Works' funds in a certificate of deposit.

Debt Administration:

Debt service is administered by the Public Debt Commission and can only be initiated through Council resolution with approval from the Commissioner of Public Works (or his designee, the Superintendent of Water Works).

The Water Works continues to make its regularly scheduled payments on its bonds. All bond debt covenants have been met.

As of December 31, 2003 the Water Works debt consisted of \$14.5 million in revenue bonds through the State of Wisconsin Safe Drinking water Loan program and \$38.2 million in general obligation bonds for a total of \$52.7 million.

Economic Factors

On June 1, 2002, the Water Works increased rates by an average of 10% in accordance with an order issued by the Public Service Commission of Wisconsin dated February 15, 2002.

There was no rate change in 2003, nor was there any pending rate change request initiated in 2003 for subsequent years.

Changing water use patterns in recent years have resulted in a steady decline in volume of water sold, as shown in Table A-4. Averaged over the past 20 years, water sold has decreased 1% per year. The loss of "wet industries" (breweries, leather tanneries, food processors, etc.) coupled with residential water conservation measures explains this trend.

In an effort to increase commercial and industrial water sales, the Water Works filled a position of Marketing Specialist in late 2003. This position is charged with raising awareness of Milwaukee's high quality and ample supply of drinking water. The objective is to encourage existing customers considering expanding to do so locally as well as to attract new large water users to relocate to the Milwaukee area.

Table A-4 Sale of Water (1,000,000 gallons)

Customer Class	2003	2002	2001	2000	1999
Residential	13.5	13.7	13.7	13.5	14.0
Commercial	8.5	8.7	9.2	9.8	9.7
Industrial	6.6	7.0	7.6	8.4	8.7
Public Authority	2.6	2.6	2.4	2.1	2.1
Subtotal	31.2	32.0	32.9	33.8	34.5
Wholesale	8.2	7.9	7.9	7.8	7.2
Total	39.4	39.9	40.8	41.6	41.7

The Water Works is seeking to increase revenue and broaden the rate base by adding major new customers. A water service agreement has been negotiated with the City of New Berlin and has been approved by the Milwaukee Common Council. This agreement is now in the stage where the appropriate physical connections are being designed and constructed. The process of designing and changing these two water systems is a multi-year process. There was no water sales effect of this agreement in 2003.

The Public Service Commission of Wisconsin (PSC) recently issued an order directing an accounting change for Contributions in Aid of Construction (CIAC) for all municipally owned utilities. The effective date of the order was January 1, 2003 and has been implemented. This PSC order disallows depreciation on contributed assets as an operating cost for future rate petitions.

City of Milwaukee – Water Works
Statement of Net Assets
December 31, 2003 and 2002

Assets	2003	2002
Current Assets		
Cash and Cash Equivalents	\$11,931,189	17,642,172
Investments	15,000,000	0
Accounts Receivable (Net)	10,778,871	10,658,152
Unbilled Accounts Receivable	9,882,043	9,668,731
Accrued Interest	31,586	35,149
Due from Other Funds	7,456,077	10,915,340
Inventory of Materials and Supplies	2,585,119	2,262,673
Prepaid Items	9,679	0
Deferred Charges	0	13,244
Other Assets	176,338	298,667
Total Current Assets	57,850,903	51,494,128
Non Current Assets		
Water Plant in Service (Net)	335,176,936	337,334,144
Construction Work In Process	16,439,912	12,210,173
Other Property (Net)	415,017	416,995
Total Non Current Assets	352,031,865	349,961,312
Total Assets	409,882,768	401,455,440
Current Liabilities		
Accounts Payable	2,305,753	794,405
Interest Payable	415,463	322,711
Accrued Wages	1,103,653	1,334,183
Compensated Absences	920,833	943,275
Due to Other Funds	1,732,373	1,548,948
Long-term Debt Due Within One Year	5,810,967	5,462,754
Total Current Liabilities	12,289,042	10,406,276
Non Current Liabilities		
General Obligation Bonds Payable	33,176,352	38,087,219
Revenue Bonds Payable	13,745,299	14,548,378
Total Noncurrent Liabilities	46,921,651	52,635,597
Total Liabilities	59,210,693	63,041,873
Net Assets		
Invested in Capital Assets, net of related debt	299,299,247	291,862,961
Unrestricted	51,372,827	46,550,606
Total Net Assets	\$350,672,074	338,413,567

The accompanying Notes to Financial Statements are an integral part of these statements.

City of Milwaukee – Water Works
Statement of Revenues, Expenses and Changes
in Fund Net Assets
For the Years Ending December 31, 2003 and 2002

	2003	2002
Operating Revenues		
Water Sales	\$60,342,384	60,906,623
Fire Protection Service	5,846,679	5,472,914
Charges for Shared Services	5,677,500	4,475,108
Other	1,947,559	3,004,932
Total Operating Revenues	73,814,123	73,859,577
Operating Expenses		
Administrative and General	4,484,117	4,486,144
Billing and Collection	2,194,616	2,600,861
Transmission and Distribution	19,722,717	16,803,346
Water Pumping	5,763,753	5,594,670
Water Treatment	9,907,060	8,463,120
Depreciation	11,928,616	12,027,348
Total Operating Expenses	54,000,879	49,975,489
Operating Income	19,813,244	23,884,088
Non-operating Revenues (Expenses)		
Interest Income	346,623	385,626
Interest Expense	(2,552,893)	(2,845,506)
Miscellaneous	322,118	440,510
Income Before Capital Contributions and Transfers	17,929,093	21,864,718
Capital Contributions	2,053,370	356,174
Transfers In	0	7,395,084
Transfers Out	(7,723,956)	(7,974,459)
Increase in Net Assets	12,258,507	21,641,517
Net Assets Beginning of Period	338,413,567	316,772,050
Net Assets End of Period	\$350,672,074	338,413,567

The accompanying Notes to Financial Statements are an integral part of these statements.

City of Milwaukee – Water Works
Statement of Cash Flows
For the Years Ended December 31, 2003 and 2002

	2003	2002
Cash Flows from Operating Activities		
Receipts from customers and users	\$73,968,660	71,132,308
Cash receipts from other funds	3,655,931	495,655
Payments to suppliers	(16,069,911)	(15,367,981)
Payments to employees	(20,970,096)	(19,800,264)
Payments to other funds	(4,150,127)	(15,556,409)
Net Cash Provided by Operating Activities	36,434,457	20,903,309
Cash Flows from Noncapital Financing Activities		
Transfer from other funds	—	7,395,084
Transfer to other funds	(7,723,956)	(7,974,459)
Net Cash Used in Noncapital Financing Activities	(7,723,956)	(579,375)
Cash Flows from Capital and Related Financing Activities		
Proceeds from sale of bonds and notes	-	17,953,357
Acquisition of property, plant and equipment	(11,945,797)	(10,687,214)
Retirement of bonds, notes and revenue bonds	(5,462,753)	(5,716,317)
Payment to refunded bond escrow agent	-	(18,405,008)
Interest paid	(2,363,120)	(2,403,752)
Net Cash Used in Capital and Related Financing Activities	(19,771,670)	(19,258,934)
Cash Flows from Investing Activities		
Purchase of Investments	(15,000,000)	—
Interest income	350,186	385,626
Net Cash Provided by (used in) Investing Activities	(14,649,814)	385,626
 Net Increase in Cash and Cash Equivalents	 (5,710,983)	 1,450,626
Cash and Cash Equivalents - Beginning	17,642,172	16,191,546
Cash and Cash Equivalents - Ending	\$11,931,189	17,642,172

The accompanying Notes to Financial Statements are an integral part of these statements.

Continued

City of Milwaukee – Water Works
Statement of Cash Flows
For the Years Ended December 31, 2003 and 2002

	2003	2002
Cash and Cash Equivalents at Year End Consist of:		
Unrestricted Cash	<u>\$11,931,189</u>	<u>17,642,172</u>

**Reconciliation of Operating Income to Net Cash
Provided by Operating Activities**

Operating income	\$19,813,244	23,884,088
Adjustments to reconcile operating income to net cash provided by operating activities:		
Depreciation	11,928,615	12,027,348
Changes in assets and liabilities:		
Receivables	(334,031)	(3,309,312)
Due from other funds	3,642,688	(11,249,521)
Inventories	(322,446)	349,897
Prepaid items	(9,679)	0
Deferred Charges	13,243	15,986
Other assets	122,329	68,010
Accounts Payable	1,511,348	(1,365,009)
Accrued liabilities	(252,972)	41,312
Deferred revenue	322,118	440,510
Net cash provided by operating activities	<u>\$36,434,457</u>	<u>20,903,309</u>

Non-cash Activities:

During the year, water mains and related property, installed by others were deeded to the Water Works in the amount of	\$2,053,370	356,174
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The accompanying Notes to Financial Statements are an integral part of these statements.

City of Milwaukee – Water Works

Notes to Financial Statements

December 31, 2003 and 2002

1. Summary of Significant Accounting Policies

The City of Milwaukee Water Works (“Water Works”) is an enterprise fund within the primary government of the City of Milwaukee (the “City”). The Water Works provides water to residents and commercial enterprises in Milwaukee County. The financial statements of the Water Works have been prepared in accordance with accounting principles generally accepted in the United States of America (GAAP), as prescribed by the Governmental Accounting Standards Board (GASB) modified for certain requirements of the Public Service Commission of Wisconsin (“PSC”). The PSC regulates rates charged to customers and other practices of the Water Works. To facilitate the understanding of data included in the financial statements, summarized below are the significant accounting policies.

Reporting Entity — As defined by accounting principles generally accepted in the United States of America, the financial reporting entity consists of a primary government as well as its component units which are legally separate organizations for which the elected officials of the primary government are financially accountable. Financial accountability is defined as:

- (1) Appointment of a voting majority of the component unit's board and either
 - (a) the ability to impose will by the primary government or
 - (b) the possibility that the component unit will provide a financial benefit to or impose a financial burden on the primary government, or
- (2) Fiscal dependency on the primary government.

Based upon the required criteria, the Water Works has no component units and is not a component unit of any other entity. However, because the Water Works is not legally separate from the City, it is included in the financial statements of the City as an enterprise fund.

Basis of Accounting—The accompanying financial statements were prepared on the accrual basis of accounting. Revenues from operations, investments, and other sources are recorded when earned. Expenses (including depreciation and amortization) of providing services to the public are accrued when incurred. Under the accrual basis of accounting, revenues are recognized in the accounting period in which they are earned and expenses are recognized in the period they are incurred.

Non-exchange transactions, in which the Water Works receives value without directly giving equal value in return, include contributions and grants. On an accrual basis, revenue from contributions and grants is recognized in the fiscal year in which all eligibility requirements have been satisfied. Eligibility requirements include timing requirements and expenditure requirements. Timing requirements specify the year when the resources are required to be used or the fiscal year when use is first permitted. Expenditure requirements specify the year in which the resources are provided to the Waterworks on a reimbursement basis.

Pursuant to GASB Statement No. 20, *Accounting and Financial Reporting for Proprietary Funds and Other Governmental Entities that Use Proprietary Fund Accounting*, private-sector standards of accounting and financial reporting issued prior to December 1, 1989, generally are followed to the extent that those standards do not conflict with or contradict guidance of the Governmental Accounting Standards Board. The Water Works also has the option of following subsequent private-sector guidance, subject to this same limitation. The Water Works has elected not to follow subsequent private-sector guidance.

Cash equivalents—Cash equivalents represent all highly liquid investments purchased with original maturities of ninety days or less are stated at cost or amortized cost, which approximates fair value, and are invested with the City Treasurer.

Accounts Receivable—Accounts receivables is composed of charges to customers for water services and receivables for sundry bill charges that cannot be attached to the property. The year-end balance includes actual unpaid charges and a year-end estimate of the 2003 receivables that will be billed in the first quarter of 2004.

Inventory of Materials and Supplies—Inventories of materials and supplies are stated at moving average cost or lower of cost or market, based upon perpetual record keeping systems and periodic cycle counts of quantities on hand.

Capital Assets—Capital assets are defined by the Water Works as assets with an initial, individual cost of more than \$2,000 and an estimated useful life in excess of a year. Capital assets are capitalized at cost when purchased or constructed. Donated capital assets are recorded at their estimated fair value at the date of donation. Costs of depreciable property retired are removed from utility plant accounts and are charged to accumulated depreciation. Maintenance and repair costs are charged to operations as incurred and renewals and improvements are added to the asset accounts. Depreciation is provided over the estimated useful lives using the straight-line method. The estimated useful lives are as follows:

Building and Improvements	45–58
Transmission and Distribution Systems	64–110
Machinery and Equipment	6–56

Bond Premiums, Discounts, and Issuance Costs—Bond premiums and discounts, as well as issuance costs are deferred and amortized over the life of the bonds using the effective interest method. Bonds payable are reported net of the applicable bond premium or discount. Bond issuance costs are reported as deferred charges and amortized over the term of the related debt.

Net Assets—Equity is displayed in three components as follows:

Invested in Capital Assets, Net of Related Debt—This consists of capital assets, net of accumulated depreciation, less the outstanding balances of any bonds, mortgages, notes, or other borrowings that are attributable to the acquisition, construction, or improvement of those assets.

Restricted—This consists of net assets that are legally restricted by outside parties or by law through constitutional provisions or enabling legislation. When both restricted and unrestricted resources are available for use, generally, it is the Water Work’s policy to use restricted resources first, then unrestricted resources when they are needed. The Water Works has no restricted net assets at December 31, 2003 and 2002.

Unrestricted—This consists of net assets that do not meet the definition of “restricted” or “invested in capital assets, net of related debt”.

Vacation Benefits—Vacation benefits are recorded as expenses over the periods the benefits accrue to the employees.

Sick Leave—Sick leave is recorded as an expense when paid since accumulated sick leave is forfeited upon termination. Upon retirement, employees are generally entitled to payment of accumulated sick leave up to a maximum of 30 days. At December 31, 2003 and 2002, accumulated sick leave earned but not taken was approximately \$4,552,570 and \$4,518,345 respectively. Accumulated sick leave is determined on the basis of current salary rate. The amount of accumulated sick leave to be forfeited upon termination and retirement is not available and would reduce this amount. Payments for sick leave to retirees were immaterial to the financial statements for the years 2003 and 2002.

Revenues—Revenues are recognized when water services are rendered. Unbilled water services are accrued as receivables and revenues at year-end. The Water Works has classified its revenues as either operating or nonoperating. Operating Revenue include activities that have the characteristics of exchange transactions including sales of water supplied to city, suburban and commercial users. Non-operating revenue includes activities that have the characteristics of non-exchange transactions, such as contributions and most Federal, State, and local grants and contracts.

Taxes—Payments in lieu of property taxes are recognized as a transfer in the year billed by the City.

Estimates—The preparation of financial statements, in conformity with accounting principles generally accepted in the United States of America, requires management to make estimates and assumptions relating to the reporting of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. Estimates also affect the reported amounts of revenues and expenses during the reporting period. A significant estimate included herein is the allowance for doubtful accounts receivable. Actual results could differ from this estimate.

New Accounting Pronouncements—In March 2003, the Governmental Accounting Standards Board (GASB) issued Statement No. 40, *Deposit and Investment Risk Disclosures – an amendment of GASB Statement No. 3*. This statement will revise the deposit and investment risks disclosed in the notes to the financial statements. The City will implement Statement No. 40 beginning with the year ended December 31, 2005.

2. Deposits and Investments

At December 31, 2003 and 2002, the reported amount of the Water Works' deposits and cash on hand were \$15,535,945 and \$611,946 respectively. The related bank balances of deposits for accounts maintained by the City Treasurer at December 31, 2003 and 2002 amounted to \$521,717 and \$602,062 respectively. Bank balances at December 31, 2003 and 2002 are insured up to \$500,000 at each banking institution. However, Water Works accounts are in the name of the City of Milwaukee; therefore, insurance is applied to the aggregate total of all City bank account balances.

Milwaukee Water Works — as of December 31 Deposits and Investments		
Description	2003	2002
Local Government Investment Pool	\$11,395,244	17,030,225
Deposits and Cash on Hand	535,945	611,946
Certificate of Deposit	15,000,000	0
Total	\$26,931,189	17,642,171

Pooled Investments:

Investments are reported at fair value. Fair value is the amount at which an investment could be exchanged in a current transaction between willing parties, other than in a forced sale. Water Works utilizes the State of Wisconsin Local Government Investment Pool (LGIP) to maintain short-term investments. The Office of the State Treasurer administers the LGIP. The funds in this pool are managed by the State of Wisconsin Investment Board and are kept in diversified and low-risk investments. The fund is invested primarily in obligations of the U.S. Government and its agencies, and high quality commercial bank and corporate debt obligations.

3. Capital Assets

Capital asset activity for the year ended December 31, 2003 was as follows:

	Balance January 1, 2003	Additions	Deletions	Balance December 31, 2003
Capital assets not being depreciated:				
Land and land improvements	\$1,585,341	—	(17,430)	1,567,911
Construction in progress	12,210,172	14,117,082	(9,887,342)	16,439,912
Total capital assets not being depreciated	13,795,513	14,117,082	(9,904,772)	18,007,823
Capital assets being depreciated:				
Buildings	22,430,386	—	(68,619)	22,361,767
Transmission and distribution system	261,642,851	5,543,026	(547,287)	266,638,590
Machinery and equipment	188,695,880	4,344,316	(681,677)	192,358,519
Non Utility Property	540,299	—	—	540,299
Total capital assets being depreciated	473,309,416	9,887,342	(1,297,583)	481,899,175
Less: accumulated depreciation:				
Buildings	12,250,048	703,417	(68,619)	12,884,846
Transmission and distribution system	64,192,592	3,120,817	(540,872)	66,772,537
Machinery and equipment	60,577,672	8,104,382	(589,587)	68,092,467
Non Utility Property	123,305	1,977	—	125,282
Total accumulated depreciation	137,143,617	11,930,593	(1,199,078)	147,875,132
Total capital assets, being depreciated, net	336,165,799	(2,043,251)	(98,505)	334,024,043
Total capital assets, net	\$349,961,312	12,073,831	(10,003,277)	352,031,866

Capital asset activity for the year ended December 31, 2002 was as follows:

	Balance January 1, 2002	Additions	Deletions	Balance December 31, 2002
Capital assets not being depreciated:				
Land and land improvements	\$1,585,341	—	—	1,585,341
Construction in progress	10,167,380	11,238,208	(9,195,416)	12,210,172
Total capital assets not being depreciated	11,752,721	11,238,208	(9,195,416)	13,795,513
Capital assets being depreciated:				
Buildings	22,430,386	—	—	22,430,386
Transmission and distribution system	255,131,489	6,943,515	(432,153)	261,642,851
Machinery and equipment	187,520,912	2,251,901	(1,076,933)	188,695,880
Non Utility Property	540,299	—	—	540,299
Total capital assets being depreciated	465,623,086	9,195,416	(1,509,086)	473,309,416
Less: accumulated depreciation:				
Buildings	11,545,615	704,433	—	12,250,048
Transmission and distribution system	61,427,837	3,058,256	(293,501)	64,192,592
Machinery and equipment	53,335,753	8,264,659	(1,022,740)	60,577,672
Non Utility Property	121,328	1,977	—	123,305
Total accumulated depreciation	126,430,533	12,029,325	(1,316,241)	137,143,617
Total capital assets, being depreciated, net	339,192,553	(2,833,909)	(192,845)	336,165,799
Total capital assets, net	\$350,945,274	8,404,299	(9,388,261)	349,961,312

4. Long Term Obligations

A. Changes in Long Term Obligations

Changes in long-term obligations for the year ended December 31, 2003 were as follows:

	Balance January 1, 2003	Additions	Deletions	Balance Dec. 31, 2003	Due Within One Year
General obligation bonds	\$42,488,920	—	(4,680,331)	37,808,589	5,007,888
Deferred amount on refundings	(1,716,520)	—	325,118	(1,391,402)	—
Unamortized premiums	1,995,150	—	(228,097)	1,767,053	—
Revenue bonds	15,330,801	—	(782,423)	14,548,378	803,079
Total	\$58,098,351	0	(5,365,733)	52,732,618	5,810,967

Changes in long-term obligations for the year ended December 31, 2002 were as follows:

	Balance January 1, 2002	Additions	Deletions	Balance Dec. 31, 2002	Due Within One Year
General obligation bonds	\$47,857,943	17,953,357	(23,322,380)	42,488,920	4,680,331
Deferred amount on refundings	(73,451)	(1,704,045)	60,976	(1,716,520)	—
Unamortized premiums	—	2,033,374	(38,224)	1,995,150	—
Revenue bonds	16,030,176	—	(699,375)	15,330,801	782,423
Total	\$63,814,668	18,282,686	(23,999,003)	58,098,351	5,462,754

B. General Obligation Bonds

The City issues general obligation bonds to provide funds for the acquisition and construction of the water plant and related equipment. General obligation bonds are secured by the full faith and unlimited taxing power of the City. The bonds for the Water Works will be retired by revenues from water services or, if the revenues are not sufficient, by future tax levies. The original amount of general obligation bonds issued in prior years was \$77,050,906. During the year ended December 31, 2002, general obligation bonds totaling \$17,953,357 were issued. There were no general obligation bonds issued during the year ended December 31, 2003. General obligation bonds outstanding at December 31, 2003 and 2002 respectively, were as follows:

Series	Maturity	Interest Rates	Original Principal	Principal Balance at Dec. 31, 2003	Principal Balance at Dec. 31, 2002
C Refunded	2003 to 2004	4.90%	\$5,000,000	—	—
D Refunded	2003 to 2006	5.00%	11,000,000	—	—
Refunding C&D	2003 to 2015	5.83%	4,851,248	3,731,334	4,140,533
E Refunded	2003 to 2006	5.49%	9,000,000	1,799,400	2,399,200
F	2003 to 2011	4.97%	13,100,000	2,620,416	3,493,888
G	2003 to 2012	4.93%	4,212,000	1,124,224	1,405,345
J	2003 to 2012	4.78%	8,718,000	2,321,820	2,903,968
K	2003 to 2013	4.64%	18,044,000	6,011,700	7,214,040
Refunding E	2003 to 2019	4.49%	3,125,658	2,832,121	2,978,589
Refunding C,D,F,G,J & K	2003 to 2016	2.5% to 5.25%	17,953,357	17,367,574	17,953,357
TOTALS			\$95,004,263	37,808,589	42,488,920

C. Revenue Bonds

In December of 1998, Water Works issued a Revenue Bond, in the amount of \$19,358,172, to the State of Wisconsin Safe Drinking Water Loan Program. This bond supports loans to the Water Works for water quality capital projects, or reimbursement for capital expenditures related to water quality, up to the face value of the bond. Loan covenants provide for the monthly escrow of revenues to repay the debt plus interest. Regardless of loan proceeds disbursement, the final maturity of the Revenue Bond is May 1, 2018. Revenue bonds outstanding at December 31, 2003 and 2002 respectively, were as follows:

Series	Maturity	Interest Rates	Original Principal	Principal Balance at Dec. 31, 2003	Principal Balance at Dec. 31, 2002
SDW-1	2003 to 2018	2.64%	\$4,873,153	4,037,527	4,254,669
SDW-2	2003 to 2018	2.64%	1,618,213	1,340,729	1,412,835
SDW-3	2003 to 2018	2.64%	5,001,067	4,143,508	4,366,348
SDW-4	2003 to 2018	2.64%	4,148,305	3,436,973	3,621,816
SDW-5	2003 to 2018	2.64%	1,918,640	1,589,641	1,675,133
TOTALS			\$17,559,378	14,548,378	15,330,801

D. Debt Service Requirements

The maturities of the outstanding principal and related interest requirements as of December 31, 2003 are as follows:

Year	GENERAL OBLIGATION BONDS		REVENUE BONDS	
	Principal	Interest	Principal	Interest
2004	\$5,007,888	1,859,069	803,079	373,477
2005	4,851,413	1,612,381	824,280	351,996
2006	4,692,226	1,357,704	846,041	329,947
2007	3,362,249	1,120,280	868,376	307,317
2008	2,845,339	959,533	891,301	284,089
2009-2013	12,038,472	3,093,769	4,822,136	1,049,991
2014-2018	4,987,591	450,301	5,493,165	370,104
2019 and beyond	23,411	585	0	0
TOTALS	\$37,808,589	10,453,622	14,548,378	3,066,921

E. Advance Refundings

In October 2002, the City issued Series 2002-A general obligation bonds in the par amount of \$17,953,357, which carried interest rates between 2.5 and 5.25 percent, to advance refund Series C (June 15, 1995), Series D (November 15, 1995), Series F (November 15, 1996), Series G (June 15, 1997), Series J (December 1, 1997), and Series K (June 15, 1998), in the amounts of \$666,788, \$2,934,580, \$4,365,280, \$1,401,050, \$2,903,292, and \$6,011,696 respectively. The transaction resulted in a refunding loss of \$1,704,045 and a premium of \$2,033,374. The net proceeds were utilized to purchase United States Government securities, that were irrevocably placed in trust with an escrow agent for the purpose of paying all future debt service on the refunded bonds. As a result, the refunded bonds are considered to be defeased and the liability for those bonds has been removed from the Statement of Net Assets. The refunding was issued solely to reduce the total debt service payments over the remaining life of the refunded bonds. The present value savings of the refunding was \$614,134.

In prior years, the Water Works defeased certain general obligation and revenue bonds by placing the proceeds of new bonds in an irrevocable trust to provide for all future debt service payments on the old bonds. Accordingly, the trust account assets and the liability for the defeased bonds are not included in the Water Work's financial statements. At December 31, 2003, \$17,680,326 of bonds were considered to be defeased.

5. Revenue Bond Debt Covenants

Fiscal Year	Gross Revenues	Debt Coverage Expenses	Net Revenue Available for Debt Service	DEBT SERVICE REQUIREMENTS			Coverage
				Principal	Interest	Total	
2001	\$62,328,687	41,823,915	20,504,772	742,691	434,661	1,177,352	17.42
2002	69,960,202	43,040,849	26,919,353	782,423	394,405	1,176,828	22.87
2003	74,149,404	49,796,219	24,353,185	803,079	373,477	1,176,556	20.70

Gross Revenues is defined as total revenues plus interest income. Debt Coverage Expenses is defined as total operating expenses minus depreciation.

The revenue bonds debt service coverage ratio requirement is the greater of 1.1 or the highest debt service coverage ratio with respect to any other debt obligations payable from the revenues of the water system.

At December 31, 2003 and 2002, there were no other debt obligations payable from the revenues of the water system.

6. Retirement Plan and Other Post-Employment Benefits

Pension Benefits

Plan Description—The City makes contributions to the Employees' Retirement System of the City of Milwaukee (the "System"), a cost-sharing multiple-employer defined benefit pension plan, on behalf of all eligible City employees. The System provides retirement, disability, and death benefits to plan members and beneficiaries. The City Charter assigns the authority to establish and amend benefit provisions. The System issues a publicly available financial report that includes financial statements and required supplementary information for the System. That report may be obtained by writing to the Employees' Retirement System of the City of Milwaukee, 200 East Wells Street, Room 603, Milwaukee, WI 53202.

Funding Policy—Plan members are required to contribute, or have contributed on their behalf, a percentage of their annual earnable compensation equal to 5.5%, 6%, 7% and 7% for general City employees, police officers, firefighters, and elected officials, respectively. The City is required to contribute the actuarially determined amount. The City Charter assigns the authority to establish and amend contribution requirements. The Water Work's contribution to the System for the years ending December 31, 2003 and 2002 was \$929,322 and \$845,743 respectively and is equal to the required contributions on behalf of the plan members for the year.

Deferred Compensation

Employees of Water Works are eligible to participate in the City's deferred compensation plan. The City is the trustee of the plan and accounts for the activity in the Pension and Other Employee Benefit Trust fund. Contributions by employees of Water Works to the Plan during 2003 and 2002 were \$1,027,054 and \$995,824 respectively.

Other Post-Employment Benefits

The City provides post-employment medical and life insurance coverage for substantially all retirees. Such benefits are recorded when paid. These costs are recorded in the City of Milwaukee General Fund. The Water Works' portion of these costs cannot be reasonably estimated for the years ended December 31, 2003 and 2002.

7. Related Party Transactions

A summary of significant revenue and expense transactions between the City and Water Works for 2003 and 2002 are shown below:

		2003	2002
Revenues (receipts from the City):	Water Consumption	\$292,507	292,507
Expenses (payments to the City):	Payment-in-lieu-of-taxes	\$7,723,956	7,974,459
	Employee Fringe Benefits	5,734,425	5,301,615
	Administrative Services	913,452	996,859
	Electrical Equipment Maintenance	858,823	766,870
	Motor Vehicle Usage and Maintenance	638,512	634,739
	Street Repairs	3,966,787	2,888,389
	All Other Services	2,573,240	2,291,037
Total Payments to City		\$22,409,195	20,853,968

The Water Works also acts as a billing and collection agent for sewer and other municipal charges and is reimbursed for costs incurred in providing such billing services.

The City purchases the delinquent water and sewer accounts receivables of the Water Works at the unpaid amounts. Any subsequent uncollectible accounts are absorbed by the City.

The Water Works has an annual maximum contingent liability of \$200,000 for general liability claims. Claims in excess of this amount, if any, are the liability of the City.

8. Regulatory Agency

Certain PSC reporting requirements give rise to differences between revenues and expenses that are included in the PSC reports and these financial statements. The more significant of these differences are as follows: (1) the amount of payment-in-lieu-of-taxes allowed for PSC purposes exceeds the amount of taxes actually paid; and (2) operating transfers to the City of Milwaukee are reflected as miscellaneous adjustments to Retained Earnings for PSC purposes, rather than being included in the computation of Net Income.

The effect of such differences on net income are as follows for the years ended December 31, 2003 and 2002:

	(Thousands of Dollars)	
	2003	2002
Increase in Net Assets as shown in accompanying financial statements	\$12,259	21,641
Transfers (net) to the City of Milwaukee	—	(7,395)
Contributed Capital	—	(356)
Donated Land	17	—
Additional Taxes Allowed as an Expense	—	(399)
Net Income as Shown on PSC Reports	\$12,276	13,491

9. Commitments and Contingencies

The Water Works is generally committed under the terms of various contracts for construction of improvements and additions to the Water Works system. Contract terms provide for partial payments as construction progresses with specified retention to assure full contract compliance. Open commitments on such contracts as of December 31, 2003 totaled \$6,743,699.

10. Transfers and Inter-Fund Balances

At December 31, 2003 and 2002, the Water Works has recorded a due from other funds of \$7,456,077 and \$10,915,340 respectively which in part represents cash held by the general obligation debt fund of the City on behalf of Water Works for the 2004 and 2003 respective principal and interest payments on its general obligation bonds. The remaining balance represents the amount owed to the Water Works as a result of regular advance and reimbursement activities. At December 31, 2003 and 2002, the Water Works has recorded a due to the City (general Fund) of \$1,732,373 and \$1,538,948 respectively for sewer maintenance fees collected by the Water Works for the Sewer Maintenance Fund.

In 2002, the City transferred back \$7,395,084 from the general obligation debt fund to Water Works resources for repayment of the Water Works general obligation bonds. The Water Works also transfers funds to the City (general fund) for payments in lieu of taxes (PILOT). In 2003 and 2002, the PILOT transfer to the City was \$7,723,956 and \$7,974,459 respectively.

Water Quality Information

The Milwaukee Water Works reported in the 2003 Water Quality Report that our drinking water quality continues to surpass all state and federal regulations, without exception. The report is available at www.water.mpw.net. **All the chemicals on the following list were tested for but not detected.**

2003 Undetected Chemical Contaminant List

INORGANIC CHEMICALS

Antimony, Arsenic, Beryllium, Cadmium, Cerium, Cesium, Chlorite, Cobalt, Cyanide, Dysprosium, Erbium, Europium, Gadolinium, Gallium, Germanium, Gold, Hafnium, Holmium, Iridium, Lanthanum, Lead, Manganese, Mercury, Molybdenum, Neodymium, Niobium, Nitrate, Nitrite, Osmium, Palladium, Platinum, Protactinium, Rhodium, Samarium, Selenium, Silver, Tantalum, Tellurium, Thallium, Thorium, Thulium, Tin, Titanium, Tungsten, Uranium, Ytterbium, Zinc and Zirconium.

SYNTHETIC ORGANIC CHEMICALS

Acenaphthene; Acenaphthylene; Acetochlor; Alachlor (Lasso); Aldicarb; Aldicarb sulfone; Aldicarb sulfoxide; Aldrin; Ametryn; Anilazine; Anthracene; Aspon; Atraton; Atrazine; Azinphos-ethyl; Azinphos-methyl; Bendiocarb; Benfluralin; Benzo(a)anthracene; Benzo(b)fluoranthene; Benzo(k)fluoranthene; Benzo(a)pyrene; alpha-Benzenhexachloride; beta-Benzenhexachloride; delta-Benzenhexachloride; gamma-Benzenhexachloride (Lindane); Bolster; Bromacil; Burachlor; Butylate; Butylbenzylphthalate; Carbaryl; Carbofuran; Carboxophenothion; Carboxin; Chlordane alpha, Chlordane gamma, Chlordane, Chlorfenvinphos; Chlorobenzilate; 2-Chlorobiphenyl; Chloroneb; Chloropropylate; Chlorothalonil; Chlorpropham; Chlorpyrifos; Chlorpyrifos methyl; Chrysene; Clomazone; Clopyralid; Coumaphos; Crotoxypfos; Cyazaine; Cycloate; 2,4-D; Dalapon; DCPA; 4,4'-DDD; 4,4'-DDE; 4,4'-DDT; Deethylatrazine; Deisopropylatrazine; Demeton O; Demeton S; Desethylatrazine; Desisopropylatrazine; Diazinon; Dibenzo(a,h)anthracene; 1,2-dibromo-3-chloropropane (DBCP); di-n-butylphthalate; Dicamba; Dichlobenil; Dichlofenthion; Dichloran; 2,3-dichlorobiphenyl; Dichlorovox; Dicrotophos; Dieltrin; Di (2-ethylhexyl) adipate; Di (2-ethylhexyl) phthalate; Diethylphthalate; Dimehoate; Dimethylphthalate; 2,4-dinitrotoluene; 2,6-dinitrotoluene; Dinoseb; di-n-octylphthalate; Dioxathion; Diphenzmid; Diquat; Disulfoton; Disulfoton sulfone; Disulfoton sulfoxide; Endosulfan I; Endosulfan II; Endosulfan sulfate; Endothal; Endrin; Endrin aldehyde; EPN; EPTC; Erucylamide; Esfenvalerate; Ethalfuralin; Ethion; Ethofumesate; Ethoprop; Ethylene dibromide (EDB); Etridiazole; Famphur; Fenamiphos; Fenarimol; Fenitroton; Fenoxyp-ethyl; Fensulfuthion; Fenthion; Fluzafop-butyl; Fluchloralin; Fluometuron; Fluoranthene; Fluorene; Fluridone; Fonofos; Glyphosate (Round-up); Heptachlor; Heptachlor epoxide; 2,2',3',4',4',6'-heptachlorobiphenyl; Hexachlorobenzene; 2,2',4',4',5,6'-hexachlorobiphenyl; Hexachlorocyclopentadiene; Hexazinone; 2-hydroxycarbofuran; Indeno (1,2,3-cd)pyrene; Iprodione; Isafenphos; Isophorone; Leptophos; Malathion; Merphos; Metalaxyl; Methoxychlor; Methomyl; 1-methyl naphthalene; 2-methyl naphthalene; Methyl paraoxon; Methyl parathion; Dual (Metolachlor); Metribuzin (Sencor); Metsulfuron methyl; Mevinphos; MGK-264 isomer a; MGK-264 isomer b; MGK-326; Mirex; Molinate; Monocrotophos; Naled; Naphthalene; Napropamide; trans-Nonachlor; Norflurazon; 2,2',3',4',5,6'-Octachlorobiphenyl; Oryzalin; Oxadiazon; Oxamyl (Vydate); Oxyfluorfen; Parathion; Pebulate; Pendimethalin; Pentachlorobenzene; Pentachloronitrobenzene; 2,2',3',4',6-Pentachlorobiphenyl; Pentachlorophenol; cis-Permethrin; trans-Permethrin; Phenanthrene; Phorate; Phosmet; Phosphamidon; Picloram (Tordon); Polychlorinated Biphenols (total); Profluralin; Prometon; Prometryn; Pronamide; Propachlor; Propanil; Propazine; Propiconazole isomer a; Propiconazole isomer b; Prothiofos; Pyrene; 2,4,5-TP (Silvex); Simazine; Simetryn; Stirofos; Sulfotep; 2,3,7,8-TCDD (Dioxin); Tebuthiuron; TEPP; Terbacil; Terbufos; Terbutryn; 1,2,4,5-Tetrachlorobenzene; 2,3',4',4'-Tetrachlorobiphenyl; Thiabendazole; Thiobencarb; Thionazin; Toxaphene; Triademefon; Tribufos (DEF); Trichlorfon; 2,4,5-Trichlorobiphenyl; Trichloronate; Tricyclazole; Trifluralin; Vernolate; Vindozolin.

VOLATILE ORGANIC CHEMICALS

Acetone; Acrylonitrile; Allyl chloride; Benzene; Bromobenzene; Bromodichloromethane; Bromoform; Bromomethane; 2-Butanone (MEK); n-Butylbenzene; sec-Butylbenzene; tert-Butylbenzene; Carbon disulfide; Carbon tetrachloride; Chloroacetonitrile; Chlorobenzene; 1-Chlorobutane; Chloroethane; Chloromethane; Chloroprene; 2-Chlorotoluene (o-); 4-Chlorotoluene (p-); Cyclohexanone; 1,2-Dibromo-3-Chloropropane; 1,2-Dibromoethane (EDB); Dibromobenzene; 1,3-Dichlorobenzene; 1,2-Dichlorobenzene; 1,4-Dichlorobenzene; trans-1,4-Dichloro-2-butylene; Dichlorodifluoromethane; 1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethylene; cis-1,2-Dichloroethylene; trans-1,2-Dichloroethylene; Dichloromethane; 1,2-Dichloropropane; 1,3-Dichloropropene; 1,1-Dichloropropanone; 1,1-Dichloropropylene; cis-1,3-Dichloropropylene; trans-1,3-Dichloropropylene; Diethyl ether; 1,4-Dioxane; Epichlorohydrin; Ethyl acrylate; Ethylbenzene; Ethyl methacrylate; Hexachlorobutadiene; Hexachloroethane; 2-Hexanone; Isopropylbenzene; 4-Isopropyltoluene (p-); Methacrylonitrile; Methacrylate; Methyl iodide (Iodomethane); Methylmethacrylate; 4-Methyl-2-pentanone (MIBK); 2-Methyl-2-propanol; Methyl-t-butyl ether (MBTE); Naphthalene; Nitrobenzene; 2-Nitropropane; Pentachloroethane; Propionitrile; n-Propylbenzene; Styrene; 1,1,1,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethane; Tetrachloroethylene; Tetrahydrofuran; Toluene; 1,2,3-Trichlorobenzene; 1,2,4-Trichlorobenzene; 1,1,1-Trichloroethane; Trichloroethylene; Trichlorofluoromethane; 1,2,3-Trichloropropane; 1,1,2-Trichloro-1,2,2-trifluoroethane; 1,2,3-Trimethylbenzene; 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene; Vinyl acetate; Vinyl chloride; Xylene, total.

Treated Water Quality

Listed below are contaminants detected in Milwaukee's drinking water during 2003. *All are below levels allowed by state and federal laws.*

Substance	Ideal Goals (MCLGs)	Highest Level Allowed (USEPA – MCLs)	Average Value	Highest Level Detected	Source(s) of Contaminant
Aluminum	0.2 mg/L	0.2 (SMCL)	0.04 mg/L	0.14 mg/L	Residual from water treatment
Barium	2 mg/L	2 mg/L	0.019 mg/L	0.019 mg/L	Natural deposits
Bromate	RAA	10 ug/L	<0.003 ug/L	0.005 ug/L	Disinfection byproduct
Chlorine, Total		4 mg/L	1.30 mg/L	1.38 mg/L	Residual of water disinfection
Chromium	100 ug/L	100 ug/L	6 ug/L	7 ug/L	Natural deposits
Copper	1.3 mg/L	1.3 mg/L (AL)	0.063 mg/L (AL)	NR	Natural deposits, corrosion of household plumbing systems
Fluoride		4 mg/L	0.97 mg/L	1.2 mg/L	Water treatment additive, natural deposits
Haloacetic Acids (9), Total	0 ug/L	60 ug/L	3 ug/L	4.1 ug/L	Byproduct of drinking water disinfection
Lead	0 ug/L	15 ug/L (AL)	7.8 ug/L (AL)	NR	Natural deposits, corrosion of household plumbing systems
Nickel	100 ug/L	100 ug/L	3 ug/L	4 ug/L	Metal alloys, electroplating, batteries, chemical production
Potassium	NR	NR	1.3 mg/L	1.5 mg/L	Natural deposits
Radium – combined	0 pCi/L	5 pCi/L	0.15 pCi/L	0.15 pCi/L	Natural deposits
Sodium	NR	NR	9.2 mg/L	12.2 mg/L	Natural deposits
Sulfate	250 mg/L	250 mg/L (SMCL)	29 mg/L	31 mg/L	Naturally present
Total Coliform Bacteria	0	<5 % of samples/month	0 %	0.2 %	Naturally present in the environment
Total Organic Carbon	TT	TT	1.4 mg/L	2.1 mg/L	Naturally present
Total Organic Halides	NR	NR	26 ug/L	100 ug/L	Byproduct of drinking water disinfection
Trihalomethanes, Total	0 ug/L	80 ug/L	4.7 ug/L	17.7 ug/L	Byproduct of drinking water disinfection
Turbidity		< 0.3 NTU 95% of the time	0.07 NTU	0.13 NTU	Natural sediment
Uranium, Total		20 pCi/L	0.54 pCi/L	0.57 pCi/L	Natural deposits

Definitions

AL = Action Level — the concentration of a contaminant that triggers treatment or other requirement that a water system must follow. Action Levels are reported at the 90th percentile for homes at greatest risk

Haloacetic Acids — mono-, di-, and tri-chloroacetic acid; mono- and di-bromoacetic acid; and bromo-chloroacetic acids

MCL = Maximum Contaminant Level — the highest level of a contaminant that is allowed in drinking water

MCGL = Maximum Contaminant Level Goal — the level of a contaminant in drinking water below which there is no known or expected risk to health

mg/L — milligram per liter, equal to one part per million (ppm)

NR — not regulated

NTU = Nephelometric Turbidity Units — unit to measure clarity of water

pCi/L — picocuries per liter is a measure of the radioactivity in water. A picocurie is 10-12 curies

RAA — running average of quarterly samples

SMCL = Secondary Maximum Contaminant Level — the highest level allowed for aesthetic concerns

Trihalomethanes — chloroform, bromochloromethane, dibromochloromethane and bromoform

TT = Treatment Technique — a required process intended to reduce the level of a contaminant in drinking water

ug/L — microgram per liter, equal to one part per billion (ppb)

< — means "less than"

General Information

Howard Avenue treatment plant rated capacity	105 million gallons per day (MGD)
Linnwood treatment plant rated capacity.....	275 MGD
Average daily pumpage.....	126 MGD
2003 total pumpage	46.1 billion gallons

The process used to treat Lake Michigan water at the two plants is an automated, ozone-disinfection/biological filtration treatment process.

Cost of drinking water	four gallons for one cent
	Or 100 cubic feet of water (752 gallons) for \$1.18
Average person daily consumption	152 gallons
Water mains	1,954 miles of pipe
# of meters in service	160,966
# of water hydrants in service	19,726
Date of original organization.....	April 18, 1871

Milwaukee’s Water Quality — Typical Finished Water Values

Parameter	Average Value	Range
Temperature	46° F	32 – 70 °F
pH	7.50	7.2 – 7.9
Hardness	8 grains per gallon	7.3 – 9.6
Hardness	136 mg/L (as CaCO3)	125 - 165
Alkalinity	100 mg/L (as CaCO3)	95 - 118
Total Dissolved Solids	180 mg/L	122 - 162
Turbidity	< 0.2 NTU	0.1 – 0.5 NTU
Calcium	33 mg/L	27 - 35
Fluoride	0.75 mg/L	0.3 – 1.1
Chlorine Residual	0.75 mg/L	0.3 – 1.3
Sodium	7.5 mg/L	6 – 12
Potassium	1.2 mg/L	0.8 – 1.4
Conductivity	312 uS/cm	280 – 380
Nitrate, as N	0.6 mg/L	0.5 – 0.7

Definitions:

- < is “less than”
- mg/L = milligrams per liter = ppm = parts per million
- gpg = grains per gallon
- NTU = nephelometric turbidity units
- uS/cm = microsiemens per centimeter

Milwaukee Water Works Administration

Executive

SuperintendentCarrie M. Lewis
Administration and Projects ManagerDale E. Mejaki

Business

Water Business ManagerEarl Smith, Jr.
Water Accounting ManagerMenbere W. Medhin
Water Revenue Manager.....Richard D. Rasmussen
Water Meter Services Manager.....Jeffrey Novak

Plants

Water Plant Manager – North.....Daniel Welk
Water Plant Manager – South.....John Gavre
Electrical Services Supervisor II.....Frank J. Straughter

Water Engineering

Water Engineering ManagerDinah G. Gant
Water Mains Design Engineer.....Mark J. Scheller

Distribution

Water Distribution ManagerLaura B. Daniels
Water Distribution District Supervisor-NorthGary K. Gibson
Water Distribution District Supervisor-South.....David Goldapp

Water Quality

Water Quality Manager.....Lon A. Couillard

841 North Broadway, Room 409 • Milwaukee, Wisconsin 53202
www.water.mpw.net

24 Hour Water Control Center: (414) 286-3710
Customer Service Monday-Friday, 7:30 a.m. to 5 p.m.
(414) 286-2830 • Fax (414) 286-2672 • TDD (414) 286-2025
Water Meter Problem: (414) 286-2856
Water Meter Reading: (414) 286-2846

